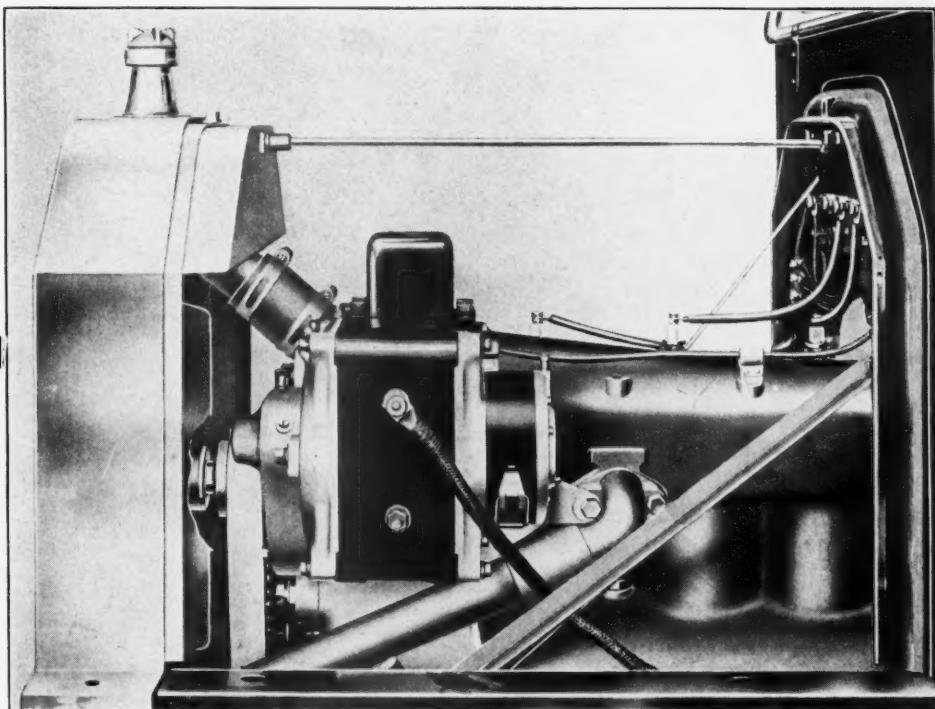


MOTOR AGE

Vol. XXVII
No. 20

CHICAGO, MAY 20, 1915

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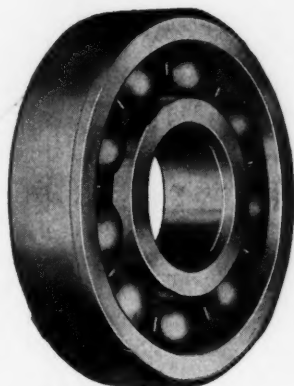
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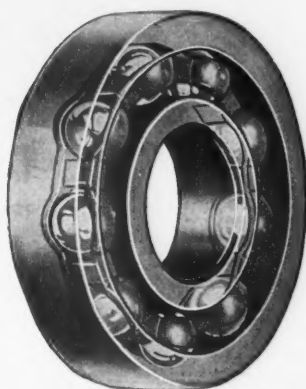
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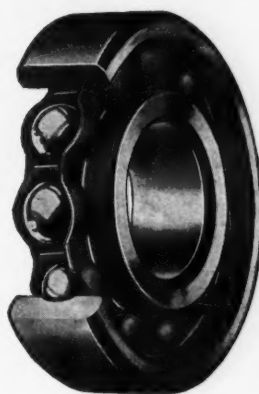
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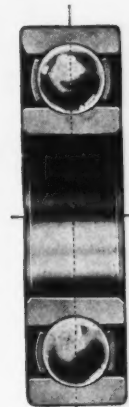
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Sectional View
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Volume XXVII

May 20, 1915

No. 20

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"Prepping the Car for the Supreme Test," which will be a feature of the next issue of Motor Age, will tell how the drivers of the racing cars groom them for an international race. This issue also will have the specifications and equipment of each of the cars to start in the May 29 event.

"Just Sit In This Car"



The clinching argument with the man who doesn't understand the distinguishing technicalities of motor, carburetor, gears, etc., is **comfort**.

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The deciding argument for the prospect who does understand, and who knows that the mechanical parts of a dozen different cars are on the same plane of perfection, is **comfort**.

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In all grades and any color. Samples on request.

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Illinois

Saves Washing Car
S. C. JOHNSON & SON,
Racine, Wis.

Gentlemen: In answer to your letter of the 24th, I had a hard time to get my boss to try the Wax on a new car he has to demonstrate with, but landed him and now he will not use anything else. He thinks it is great. It has saved me washing the car every day. Once a week or once in two weeks will keep the car looking like new. It is great stuff believe me. I take great pains in showing it up.

Yours very truly,
K. PAUL,
Schenectady, N. Y.
25 Elm St.,

Thought Car Was Repainted
S. C. JOHNSON & SON,
Racine, Wis.

Dear Sirs: I must tell you a little experience I had the other day. An auto came in to be washed: it was so covered with mud you could not see the auto. I washed it and polished it with Johnson's Wax; the man came back after driving around the city, said everyone thought his car had been repainted.

Yours truly,
A. H. BRILL,
Hastings, Mich.

What Kept Car So Nice?
S. C. JOHNSON & SON,
Racine, Wisconsin.

Gentlemen: We used the Wax on the auto and had several inquiries regarding the shine. One man, a stranger, called up by phone, asking what we used to keep the car looking so nice. He is now a user of Johnson's Wax also.

Yours truly,
E. F. LINGQUIST,
Logansport, Ind.

Leaves Hard, Dry Surface
S. C. JOHNSON & SON,
Racine, Wisconsin.

Gentlemen: I have never used anything that anywhere near equals Johnson's Prepared Wax for giving a high gloss that will turn rain and dust.

All polishes that I have ever used before leave such an oily surface that the body will collect more dust after using it than before, but your Wax leaves such a hard, dry, as well as glossy surface that dirt does not stick to it, and for the first time I can now polish my car without getting my hands all over grease and oil and musing things up generally.

Yours very truly,
Chicago, Ill. B. F. SAWIN,

What Motorists say about JOHNSON'S PREPARED WAX

—is that it is a dust-proof, waterproof, mud-proof and sun-proof polish for motor cars, which gives a hard, dry, glossy finish that lasts. Users say Johnson's Prepared Wax is unequalled. Judge for yourself. Send for sample can.

S. C. JOHNSON & SON
RACINE Dept. MA WISCONSIN

Makes Car Easy to Clean

Gentlemen: Upon the arrival of your sample can I had the Wax applied to my car in light coats. Each coat was allowed to dry well and then well rubbed before the application of the next. After the third coat the varnish seemed to me to have acquired a gloss of greater depth and the car looked as well as when new. After a few rain storms I had the car washed clean of the mud acquired and was more than pleased to find the car still bright without the application of another coat of Wax. An occasional coat of wax has kept the car looking well and easy to clean during our rainy and muddy winter.

Very truly yours,
ERNEST O. BILLWILLER,

Best He Ever Used
S. C. JOHNSON & SON,
Racine, Wis.

Gentlemen: I must say that Johnson's Prepared Wax is the best material that I have ever seen or used for this work and have recommended it to several, who I know are also using same with as good results as I am having myself.

Very truly yours,
R. M. LAING,
Perth Amboy, N. J.

Is Indispensable
J. C. JOHNSON & SON,
Racine, Wis.

Dear Sirs: Have used the sample which you sent me and find that it is the best polish I have used on an automobile. It keeps its lustre and improves the looks of the machine 100%. I will keep a can on hand as it is indispensable.

Yours truly,
H. L. MOOREHOUSE,
83 Liberty St.,
Danbury, Conn.

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RACINE, WISCONSIN

I enclose 10c for a can of Johnson's Prepared Wax—sufficient for one polish on a large car.

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Address.....

City & State.....

My accessory dealer is.....



Send us 10c for a can of Johnson's Prepared Wax—sufficient for one application on a large car.

A Hard Polish—That Collects No Dust
S. C. JOHNSON & SON,
Racine, Wis.

Gentlemen: I find that Johnson's Prepared Wax is a very fine preparation to use on automobile bodies. The wax does not collect dust like most body polishes. I find that it retains its hardness under this southern sun. The car I used this polish on had lost its original gloss. After applying one coat of the Wax the finish looked like new. Johnson's Prepared Wax is the best polish that I know of for automobile bodies. I remain

Yours truly,
JOHN BARON, JR.,
El Centro, Calif.

MOTOR AGE



What Fashion Dictates for Spring and Summer Motoring

By J.C. Burton

THE English gentleman, with whom clothes are as sacred as is music with the German, had better look to his sartorial laurels. His neutral and watchfully waiting Yankee cousin across the torpedo-infested Atlantic has started to dress for his sports and provided he does not suddenly brake his newly-acquired tastes, soon will be qualified to serve as a model for the fashion plates.

In America, we always have taken our sports seriously,

playing the game hard and to win. The championships that we have captured in international competition is proof of the

The coat at the left is waterproof and made of a new fabric called *Styma* cloth, which contains no rubber, and therefore can be cleaned with gasoline. The coats, which come in tan and black, have the appearance of leather garments and sell for \$8 and \$12. The coat at the right is a self-ventilated raincoat of rubberized material. It is made with patented ventilators in the side seams at front and back and around the shoulders, which prevent condensation forming in the inside of the garment. They come in a large variety of colors and patterns. Price, \$12 to \$25. The boy shown in the illustration wears a raincoat of gabardine

Motoring duster of Palm Beach cloth, featured by the deep arm hole and the semi-sailor collar that can be fastened close around the neck. Price, \$10.50. The hat shown is of Madagascar straw, with crown of light old rose satin and drape of the same color. Price, \$3.50



veracity of such an assertion. But it is only recently that the "real, live nephew of my Uncle Sam," whom George M. Cohan once sang about, has taken his motoring, his golfing, his boat-



Motoring duster of a heavy weight imported pongee silk. The distinctive features of this coat are the pockets, which are attached to the belt, and the loose collar, that buttons at the neck. Price, \$30. The hat is made of black and white striped silk and is draped with a white veil. Price, \$7.50

ing, his tramping with a dash of style. Within the past 2 years, we have become inoculated with the English dress bacilli and as a result, the American motorist, as well as the American golfer and the American fisherman, is demanding special clothing for his favorite pastime.

Golf Causes Dressing for Sports

The widespread popularity of golf and the seeming ease with which the average American has mastered the art of driving, approaching and putting are directly responsible for the present demand for sports' clothing of all kinds, including distinctive habiliments for motoring. The devotee of Scotia's pastime was the first type of American sportsman to dress for his game. The followers of other sports, the motorist especially, gazed upon him, clad in knickerbockers and norfolk jacket, with mingled admiration and envy and decided that they too must have a special raiment for driving motor cars, whipping the streams for trout and bass, paddling a canoe and mountain climbing.

The general demand for sports' clothing was created only 2 years ago. Before that time, the handling of such a stock was con-

sidered largely as an experiment by the metropolitan merchants. Four years ago, even dressing for a day on the links was not a common custom. Studded-soled shoes and a pair of flannel trousers satisfied the average golfer. He is now more particular about his dress. He has been won over completely to knickerbockers. He wears a coat or sweater jacket where once it was a common practice to play in one's shirt sleeves, and he would no more think of appearing at the first tee or eighteenth hole without one than he would think of driving with his putter.

The motorist has become just as fastidious as the golfer. The day is past when a superannuated suit that has been discarded for business wear serves for touring and any coat that will protect the wearer from rain and dust or affords protection against the cold satisfies the gasoline pilgrim. He demands style, comfort and service in his clothes. He wants to dress the sporting role that he plays. His apparel must be as distinctive as that of the golfer.

There are reasons other than the popularity of golf that have resulted in the present unprecedented demand for motoring clothing. The private chauffeur in distinctive livery is one of several causes. After buying a suit of English whipcord for his driver, the car owner decides that it is just as important that he should be

dressed for riding in the back seat as it is for his chauffeur to be in uniform at the wheel and he immediately invests in special clothing. His coat must have swagger and style. It must tell for what purpose it is used. It must be a motoring coat and nothing else, a garment a trifle too conspicuous in cut and fabric for street wear. **Coats to Harmonize with Car**

The motor car manufacturer also is indirectly responsible for the taste in dress only recently acquired by the motorist. The maker is turning out a more refined and luxuriant model now than he did 2 or 3 years ago when the streamline body was known only across the Atlantic and the American car was noted more for its mechanical perfection than for its graceful lines and rich fitments. As a consequence, the owner is taking greater pride in his car and concomitantly taking greater pride in his personal appearance while riding in it. He wants to look as good as his car. He purchases a coat of black and white checked material or one of brilliant Scotch mixture that would be condemned as loud if worn on the street, but which harmonizes very well with the machine and when thrown over the robe rail, adds a touch of distinction to the gasoline-driven equipage.

When the American designer and tailor saw that the motorist was in the market



Motor rain shirt and helmet. The shirt is made of single-texture, rubberized fabric and has a very expansive skirt, which serves as a lap robe and protects the lower limbs and feet while the wearer is seated in the car. This garment comes in black, tan, gray and red and sells for \$5



Raincoat of plaid-backed, Priestley gabardine cloth, featured by large patch pockets with flaps. Price, \$20



Motoring coat of mahogany-colored peau de gazelle, which is featured by an expansive skirt held in at the waist by a wide belt, deep arm holes and loose collar. Price, \$57.50. The hat has a top of Roman striped silk and an under brim of white straw. It is ornamented at the side with rosette of pleated white ribbon. Price, \$10



Reseda green motoring coat of imported fabric and a reproduction of one of the last models brought to this country from France. The distinctive features of this garment are the pocket at the front and the scarf, which, when thrown about the neck, serves as a collar. Price, \$75. The hat has a brim of Madagascar straw and a blue satin crown. It is ornamented at the front with an aeroplane bow of blue satin and draped with a tan veil. Price, \$8.75



Motor coat of imported fabric of blue, black and green plaid. It has a raglan sleeve and convertible collar that can either be worn open or buttoned closely about the neck. Price, \$37.50.



Summer touring coats for men and boys are made in both the Balmacaan and convertible collar styles. These garments come in mohair, Palm Beach cloth, linen, pongee silk and other light weight worsted fabrics and sell for from \$5 to \$25

for special clothing for driving and touring, they immediately went to work and met that demand. They adapted English ideas to suit the American taste. The English fabrics, the Scotch heather mixtures and the Irish homespun are famous for their individuality and durability. They used these materials in cutting garments for the domestic trade. The English garments, which are most distinctive in cut and style, served as models. But the American manufacturer went even further. He added to English fabric and English style, more comfort, greater serviceability and superior workmanship. He made a coat that the American would wear. He had sound enough judgment to realize that the garment that pleased the Briton would not appeal to the sportsman on this side of the Atlantic.

A Coat with a History

The loose, comfortable coat, featured by an expensive skirt and deep arm holes, which first was worn by the English sportsmen while hunting or motoring, served as a model for the American motor garment. It is known as the balmacaan and has proved the most popular coat for driving that has ever been shown in the shops. It is a coat with a history. There are sev-

eral branches to its family tree. It traces its descent back over a century or more.

The balmacaan originally had no sleeves. It was a cape, cut from blankets by an English general, who was forced into the tailoring business when the government refused to provide army overcoats for his soldiers. Later, it was used by the British aristocracy as a shooting garment. About 10 years ago, when Bradley Martin, the millionaire whose famous ball at Newport caused a social furore and kept the tongues of housemaids wagging for a year or more, ordered Kenneth Durward, the London tailor, to fashion for him a garment for wear while bird shooting, the ancient army cape was resurrected and a copy made of it for the modern Croesus. The popularity of the coat was instantaneous. Not only had Bradley Martin adopted it, but it proved very serviceable since the deep arm holes did not bind the wearer when he raised the stock of his gun to his shoulder. Durward asked Martin for permission to name the coat after the millionaire's country estate, Balmacaan, and his request was granted. The name was copyrighted and used as a code word by the exclusive London tailor for several years. As the highways of the tight little

isle across the sea became choked with motor cars and the Briton demanded a coat for driving, the balmacaan was sold to the motorist as well as to the huntsman and found immediate favor.

The balmacaan first was introduced in this country 5 years ago. It became just as popular with the American as it was with the Briton and now is regarded as the last word in comfort and style by the Yankee motorist. The deep arm holes and loose sleeves permit of unhampered use of the arms while driving and the expansive skirt serves as a protection against the chilling wind and rain when the wearer is seated in the car.

Balmacaan Retains Popularity

The majority of the motor coats shown for 1915 spring and summer wear are of the balmacaan type. The garments of homespun and heather mixtures to be worn when the mercury in the thermometer drops suddenly, the dusters of linen, silk and mohair and the raincoats almost without exception are made with the deep arm hole and flaring skirt.

Particular attention has been paid this season to the manufacture of raincoats that will afford protection in the most driving downpour and several innovations are the result. A garment that should



Motor coat of a self-striped woolen fabric that is soft and warm but light in weight. The features of this coat are the long shoulder, deep collar and four large pockets. Price, \$47.50



For touring in the mountains where the mercury in the thermometer drops in midsummer, the reversible coat, shown in this illustration, is very practical. It is made of leather on one side and of English waterproof gabardine cloth on the other. Price, \$60

The motorist seated at the wheel is wearing an English coat made by Kenneth Durward, of London. This garment, the most desirable coat for the man who motors, is warm but very light in weight and is featured by a large skirt, raglan shoulders and a collar that buttons close to the neck for wind and rain protection. This coat comes in a large variety of exclusive patterns in homespun, shellands and many weaves of cheviot. The garment at the right is a single-breasted, belted back Aintree coat. Each sells for \$35. The boy's coat is a Balmacaan model



The motorist standing at the side of the car is wearing a Burberry Gabardine motor coat that is both rain and sun proof. It is full silk lined but very light in weight. This coat serves as a duster as well as a protection against showers. Price, \$35. The oil silk coat, shown on the motorist at the wheel, is the lightest weight rain coat made. When folded, it can be put in the overcoat pocket. It comes in green, tan, blue, black and brown and sells for \$20



The figure in the foreground of this illustration is wearing an imported English khaki motor suit which, made in norfolk style, is very appropriate for transcontinental touring and general utility wear. The suit can be had either in light tan or olive drab and sells for \$10. The motor coat shown is a duster which has the appearance of a top coat but is made of a very fine, light weight, all wool worsted fabric. Price, \$8



prove very popular with the tourist making a transcontinental journey or other long-distance migration is the rain shirt, which is made of a single texture rubberized fabric and cut on the lines of the balmacaan coat. It is slipped on over the head and has an expansive skirt that serves as a lap robe when the motorist is seated in the car and it covers the lower limbs. There also is a helmet of the same material which entirely covers the head and has a cape in back that prevents the rain from running down the neck of the wearer. The rain shirt and helmet come in black, tan, gray and red. The latter is very striking and gives the motorist a Mephistophelian appearance, particularly when the helmet is worn.

Another new raincoat is made of a fabric called Styra cloth, a material that can be cleaned with gasoline without fear of injuring it, since it contains no rubber. This coat resembles in appearance a leather garment and comes in two colors, tan and black.

The ventilated raincoat, cut from a rubberized material, is new this season. It has patented ventilators in the seams, both at the front and back and around the shoulders, which permit the air to enter and prevent condensation forming on the inside of the garment. These coats come in a large variety of striking colors and patterns.

Several New Dust Coats Shown

The 1915 dusters are most distinctive. They are made of mohair, Palm Beach cloth, linen and pongee silk and have much more style and snap to them than the coats of a similar type shown during previous seasons.

For trans-continental touring and motor-ing in the mountains where even in mid-summer it is very cool, a reversible coat of tan leather and English gabardine cloth should prove most utilitarian. On cold and chilly days, the leather keeps out the wind and when rain falls, the gabardine serves as excellent protection.

Shops in Chicago and New York report a great demand for driving suits this spring. Their popularity probably is due to the fact that thousands of motorists are planning trips to California this year and desire a suit that can be worn on the road. The driving suits come in light tan khaki and olive drab fustian cloth and are cut along distinctive lines. The coat is of the norfolk type and the trousers reach to the shoe tops. Knickerbockers are not popular with the motorist as they require the wearing of puttees which are extremely warm in summer.

There are several new styles of caps and gloves for the male motorist this season. For wear with the reversible coat of leather and gabardine, a gabarine cap with a leather visor is recommended. Hats of the crusher type are made in Palm Beach cloth and linen to harmonize with the dusters of the same material. The newest gloves shown are the gauntlets with the limp

leather cuff and those with leather palms and chamois backs.

The coats for the women motorists resemble those for men in that they are featured by the sweeping skirt and the deep arm hole. The most striking garment for the woman who tours is the duster of pongee silk which has the pocket attached at the belt.

The European war has had its effect on the women's garments, the shops of New York and Chicago showing the last models of importations from France. Unless peace is declared across the Atlantic very soon, the American designer will be forced to originate his own styles as it is now impossible to obtain models from Paris.

The majority of the 1915 motoring bonnets are draped with veils. The chiffon is removable, however, being fastened about the hat with an elastic band. Many of the bonnets are made of Madagascar straw which is very light in weight and even more flexible than Panama straw.

EDITOR'S NOTE—All the coats and hats shown in the illustrations accompanying this article are from Marshall Field & Co., Chicago. The car used in illustrating the men's clothing is a Premier roadster and a Baker electric and an eight-cylinder Hollier touring car served as a background to display the women's garments to advantage.

Endicott in Maxwell Wins Ohio Race

Averages 61 Miles an Hour in Century Grind

COLUMBUS, O., May 16—At one of the most successful race meetings ever held in Columbus, Endicott in the Maxwell won the honors, taking the 100-mile race today at 61 miles per hour. The meet took place at the Columbus driving park yesterday and today. The weather was favorable and the crowd today was the largest that ever attended a motor race in the Buckeye capital. It is announced that about 18,000 people paid admission to the track.

The feature of the meeting was the 100-mile race in which eleven cars started. This race was won by Bill Endicott in a Maxwell in 1 hour 38 minutes and 28% seconds. He finished only 10 seconds ahead of Hearne in a Case who had chased him from the eightieth mile. Endicott did not stop during the race and negotiated the last 25 miles with a bad front outside tire and the last 15 miles with two tires about ready to collapse. For the last 15 miles it was a question whether the tires would hold out as those on the Case, driven by Hearne, were good. Hearne stopped only once, in the seventy-seventh lap to adjust his clutch and in so doing lost the lead which he had maintained from the seventeenth lap.

Two accidents occurred during the race, but luckily none were serious. Rickenbacher, driving a Maxwell, took the lead from the start and was almost a lap ahead on the seventeenth mile when his right front tire blew out and he went through the fence. He, as well as his mechanic, escaped injury.

Gotof, driving a National, went through the fence about the same place while negotiating his twenty-ninth lap and also escaped injury. Disbrow, driving a Case, went out on the forty-fourth lap because of a broken valve. Milton, driving a Mercer, had considerable trouble with his transmission. Tidmarsh with the Great Western also had trouble. At the finish eight cars were still in the running but all but five were out of the race in reality.

Louis Disbrow while driving his Simplex Zip in an exhibition mile went through the fence after breaking his right front axle but, like the other two, escaped injury. He was driving alone. All three of the accidents were most lucky.

During the first day's racing the feature was the 25-mile minor sweepstakes and consolation race. There were eight starters in this event, which was won by Rickenbacher in a Maxwell in 23 minutes and 18% seconds. Hearne in a Case was second and Raimy in a Case was third.

Some interest was stirred up in the match race between Disbrow in his Jay-Eye-See and Rickenbacher in his Blitzen Benz. This was scheduled for the first day but Rickenbacher entered under protest because of a broken magneto. He tried to have the magneto repaired and started the second day but was bested by Disbrow in 1:04%. Rickenbacher's car did not work right.

In the 5-mile free-for-all final heat, Raimy in a Case won, with Hearne in a Case second and Disbrow in a Simplex Zip third. The time was 4:58%. In the Australian pursuit race Endicott won on the seventh lap by passing Brown, in a Chalmers, Jennings, in a Keeton, and Tidmarsh, in a Great Western.

In the exhibition performances Disbrow in his Jay-Eye-See went a mile in 52%, while Rickenbacher went the distance in the "Blitzen Benz" in 51%. In the team match race between the Maxwell and the Case teams, Hearne in a Case covered the 5 miles in 4:55% with Raimy in a Case second in 4:55% and Endicott in a Maxwell third in 4:56%.

ILLINOIS MOTORISTS THREATENED

Chicago, May 15—There are three distinct measures now before the state legislature at Springfield, any of which will be detrimental to the interests of the motorists of the state if they are enacted as laws. Motorists are becoming aroused and a lively fight is promised.

The most serious of the three measures is a bill which will double the present license fees. That is, instead of paying the present fee of \$6 for a car of 25 to 35 horsepower, the registration annually will cost \$12. Fees for other sizes of cars are raised in proportion, except for those over 50-horsepower, in which case, the registration is increased from \$10 to \$25 annually.

The present law governing the speed of a motor vehicle in this state sets the lower limits at which cities and towns may establish speed limits by ordinance. There is a bill now before the legislature which provides that any city, village or incorporated town may make such legislation as to the speed of motor vehicles as it deems proper, but in no case authorizing a higher speed than provided in the bill. That is, the towns can make the legal limit as low as they please, which would result in wholesale arrests and gross abuse of the intent of the law.

Another bill would make it necessary for motorists to stop within 50 feet of any unprotected railroad crossing. While this is a most commendable precaution, and one which every motorist should observe, its purpose is to relieve railways from liability for accidents at grade crossings of the tracks.

GEORGIA TAX LAW ATTACKED

Savannah, Ga., May 15—Suit to test the constitutionality of a city ordinance requiring motor car owners to register license numbers with the city clerk, has been brought up in the superior court by three motorists who seek an injunction restraining the city from enforcing the ordinance. The petitioners hold that the law passed by the legislature requiring the payment of a \$5 fee for license number is unconstitutional and, therefore, the municipal ordinance requiring registration of license numbers is invalid in that it forces compliance of a law, the justice of which is questioned. The ordinance provides for a fine of not more than \$100 and imprisonment of not to exceed 30 days, or both, for violations.

John A. Wilson Is Re-elected President of A. A. A. at Boston

Delegates at Annual Meeting of American Automobile Association Honor Present Executive—Chicago Gets National Tour Bureau Headquarters

BOSTON, Mass., May 17—Special telegram—John A. Wilson, the motoring patriarch of Pennsylvania and first cousin to the chief executive of the United States, was unanimously re-elected president of the American Automobile Association this afternoon at the opening day's session of the annual convention of the national organization.

The following officers also were elected without opposition: H. M. Rowe, Maryland, first vice-president; Ralph W. Smith, Colorado, second vice-president; P. J. Walker, California, third vice-president; H. J. Clark, Minnesota, fourth vice-president; Preston Belvin, Virginia, fifth vice-president; John A. Brooks, Connecticut, secretary; H. A. Bonnell, New Jersey, treasurer; and A. G. Batchelder, New York, chairman of the executive committee.

Delegates, representing about twenty states, are in attendance at the convention which closes tomorrow. The business session came to a close this evening, however, and the delegates will spend tomorrow in playing the roles of guests and taking in the sights of Boston and vicinity, with a trip through the battle grounds.

No action of an epochal nature was taken at the meeting today. The Automobile Club of Southern California, which seceded from the A. A. A. this spring following a clash with Chairman Kennedell of the contest board, was ignored and little notice taken of the insurgency. The national headquarters of the touring bureau were moved from New York to Chicago and David G. Joyce, a millionaire sportsman of Chicago, made chairman of this committee. The western and central

headquarters of the contest board also were awarded to Chicago.

At the afternoon session today, the main discussion centered about a resolution presented by Charles Thaddeus Terry of New York on double taxation, reading as follows:

Whereas, The motor-driven vehicle has become the common means of transportation, commercially and socially, that it enters into every progressive phase of human existence and no longer should be considered as a special means of travel; therefore, be it

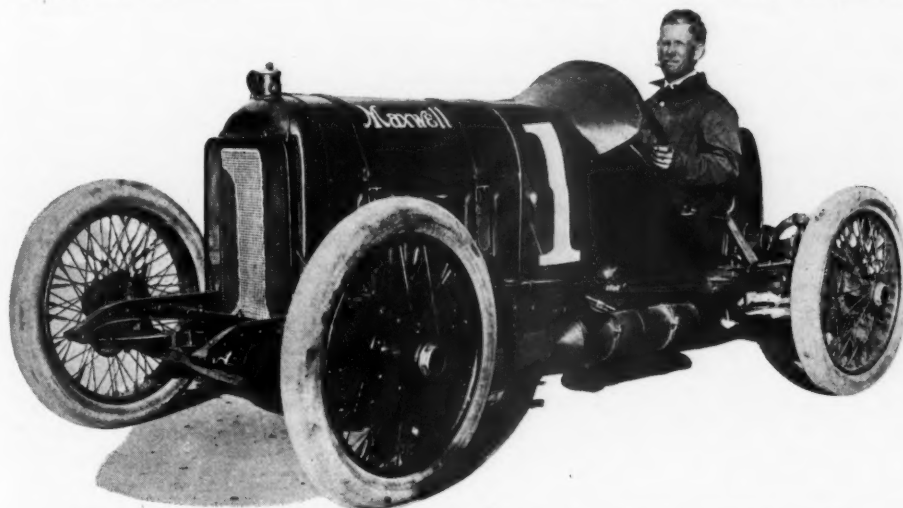
Resolved, That the American Automobile Association, through its national legislative board, contend, in the several states and in the congress and courts of the United States, for a uniform method of taxation, which shall recognize the fact that motor cars now should be included in a general property classification and taxed only as personal property. That no other tax whatever shall be imposed either in connection with the vehicle or its operation, except a nominal registration fee covering only the clerical cost of the issuing of an identification number for the vehicle and its operator in order that the police powers of the states or municipalities may not be impaired.

Ex-President Lewis R. Speare, representing Massachusetts, opposed the resolution and said that Massachusetts was satisfied with its law even though it were costing Bay state motorists more than \$1,000,000 a year. Some of the other speakers did not seem to get the drift of the resolution but H. M. Rowe, of Maryland made the most convincing speech in favor of it, after which it easily was passed by a voice vote. Three other resolutions were offered and passed, one pledging the confidence of the association in President Woodrow Wilson in the present international crisis; another on federal aid for highways and the third for a bureau of tours under national government supervision.

There were rumors of a fight to have the New York headquarters moved to Chicago and also to have the Washington headquarters closed, but Mr. Batchelder got busy with the delegates as soon as they arrived and set the motor roller to work and smoothed out all the wrinkles so that there was perfect harmony.

Dallas and Cleveland wanted the next meeting but the executive officers had picked out Washington and that settled it, so it was voted to go to the national capitol. It also was voted to change the fiscal year to a later period. The annual report showed a good balance in the treasury. A number of new clubs were voted in and there are now 139 such organizations on the rolls.

At the annual banquet tonight, Mayor Curley and Chairman Schier of the Massachusetts state highway commission spoke and addresses were made by all the ex-presidents.



BILL ENDICOTT'S MAXWELL, WINNER OF 100-MILE RACE AT COLUMBUS



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300 Cubic Inches

CUBIC space within the cylinders of a gasoline motor is no longer the sole criterion of the horsepower that can be had from such a motor. Several years ago, to get more power, the rule was to use more cubic inches of piston displacement. Today it is not essential to do this. The new method is to increase the speed of the motor, make the crankshaft rotate faster; if 1,000 revolutions per minute once was the most effective speed, it may be that today the best speed is 2,000 or perhaps 3,000 revolutions per minute. In a word, it is speed in place of cubic capacity.

THIS is why it is possible to get higher speeds out of a motor of 300 cubic inches piston displacement than it used to be possible to get out of one with 600 cubic inches. The ability of a motor to consume an explosive mixture composed of gasoline vapor and air is the best indication of the horsepower of such a motor. It is the explosive mixture that generates the power, matters of engineering design, of course, being prime considerations.

BODY design has been a factor in bringing the speed of the 300-inch motor up to and ahead of that of the 600-inch type. Wind resistance is a tremendous factor when speeds approaching 100 miles an hour are obtained. In some racing cars it takes over 90-horsepower to overcome the wind resistance at such speeds and less than 10 horsepower to propel the car. The fronts of the cars now are so designed as to cut down the front area, but it is also very important to have the rear end equally carefully planned. Study the lines of a fish and you will find that the tail is more tapered than the head, yet without doubt the body of the fish is fashioned to give the maximum speed.

Need More Speedways

CHICAGO at last is assured of a 2-mile motor speedway and for the first time in its history the Windy City, which has been one of the leading centers in the country for motor car tests of all natures, has entered the arena of real speedway racing. It would be difficult to find a more logical center for a speedway than Chicago, with its enormous wholesale distributing territory as well as its heavy retail sales. Chicago will not conflict with Indianapolis, it will not conflict with New York, with Omaha, with Sioux City or with the Pacific coast. It has a Greater Chicago population large enough to make a legitimate speedway a financial success. A speedway of this nature cannot be of so much direct benefit to the trade as one

HIGHER crankshaft speeds are being obtained in the motors today in various ways. To begin with, the pistons are smaller. This means less weight and it is possible to run them at higher speeds. Bearings have been improved so that higher speeds are possible. Lubrication has been improved and these improvements have made it possible to operate at higher speeds. The circulation of cooling water has been bettered, so that in short, the 300-cubic inch motor of today is a considerably more potent power creator than its larger brothers of 4 or 5 years ago. Thus, continued high motor speeds can be maintained for longer periods.

THE speeds possible with our 300-inch motors today are not all due directly to the motor; the improvements have been carried all through the chassis. Today we have 300-inch motors in cars weighing less than 2,000 pounds, whereas 4 or 5 years ago we had 450-inch motors in cars weighing 2,800 pounds or more. The reduction in weight has been accomplished by better materials, and better design of the many parts entering into the car. The reduction in weight has meant higher speeds with a given motor capacity.

THE Indianapolis race of next week will be more or less epoch-making in that it will be America's first great 300-inch race. Europe has had its races of small motors for several seasons, its 183-inch race 2 years ago being the real high-water mark in racing with small motors and highly developed chassis and bodies. Several American builders have tackled the problem this year in a commendable manner and the results of Indianapolis will be watched with particular interest.

in Detroit or Indianapolis, where the manufacturers largely are located, but as an advertising factor and as a general publicity medium it can work much good.

DETROIT needs a speedway for the benefit of its manufacturers, who today have to take risks making high-speed tests on the cement roads, but with a speedway could carry out continuous high-speed tests in perfect safety. Three or four good speedways are needed in addition to the present one at Indianapolis. America is a nation of 100,000,000 and of great distances and a circuit of five or six strong speedways will prove of great value to the industry.

Injustice To Motorists

DECISION of the American Automobile Association at its convention this week in Boston to act even more strongly than it has in the past against the present unjust revenue and motor vehicle laws leads to the hope that there will be action taken in our legislative bodies to remedy a crying evil. This evil exists in two forms. The basic one is the mere fact of the imposition of two distinct taxes upon the same property. The other is the wide variation in the different states as to

the amount of these taxes and the methods by which they are levied. Now that the governing motoring body in America has placed itself on record to work more vigorously than ever toward that end, prospects of at least a more uniform, if not a more just taxation are bright. A uniform method of taxation recognizing the fact that motor cars are personal property and to be taxed only as such, is the ideal toward which the motorists, through the A. A. A., are working.

March Foreign Shipments of Trucks Valued at \$4,725,563

European War Booms Sale of Commercial Vehicles and Makers Have Most Profitable Month in History of Industry

WASHINGTON, D. C., May 14—Gross figures of the exports of motor cars, in March, already published in Motor Age, were supplemented this week by the bureau of foreign and domestic commerce by detailed figures. The interesting feature of the figures is the tremendous increase in the number of commercial cars shipped abroad in March last, as compared with the exports for the same month of last year. The figures show that during March last, 1,339 motor trucks, valued at \$4,725,563 were shipped abroad, and, of course, it is understood they went to the warring countries in Europe. In March a year ago the number shipped abroad was fifty and the value \$63,932. During the 9 months ended March the exports of trucks increased from 543, valued at \$861,654, in 1914, to 6,313, valued at \$18,737,487, in 1915.

On the other hand, the exports of pleasure cars dropped from 3,538, valued at \$2,984,915 in March, 1914, to 2,429, valued at \$1,958,302, in March last, and from 19,928, valued at \$17,904,002, during the 9 months of 1914, to 11,563, valued at \$9,551,731, during the same period of 1915.

John Bull Buys Most Cars

As has been the case for a number of years, the United Kingdom was the largest buyer of American motor cars during the periods under consideration. The exports of cars, both commercial and pleasure, increased from 819, valued at \$637,884, in March, 1914, to 1,566, valued at \$2,468,014, in March last, while during the 9 months' period the number increased from 5,732, valued at \$4,542,123, in 1914, to 6,197, valued at \$8,915,029, in 1915.

While France imported only 164 cars, valued at \$98,427, in March, 1914, the number in March, 1915, increased to 460, and the value to \$1,918,053, while during the 9 months' period the number increased from 700, valued at \$509,241, in 1914, to 2,896, valued at \$8,325,140, in 1915.

The blockade on Germany is shown by the fact that in March, 1914, 361 cars, valued at \$264,203, were shipped to that country, while in March last the number had decreased to four and the value to \$2,800. During the 9 months' period the exports to Germany dropped from 951, valued at \$677,347, in 1914, to twenty, valued at \$20,164 in 1915.

Italy's imports of American motor cars amounted to twenty-three, valued at \$13,664, in March, 1914, and during March last the number exported also was twenty-three, but the value had dropped to \$13,273. During the 9 months' period the shipments to that country declined from 234, valued at \$163,808, in 1914, to sixty-five, valued at \$48,385, in 1915.

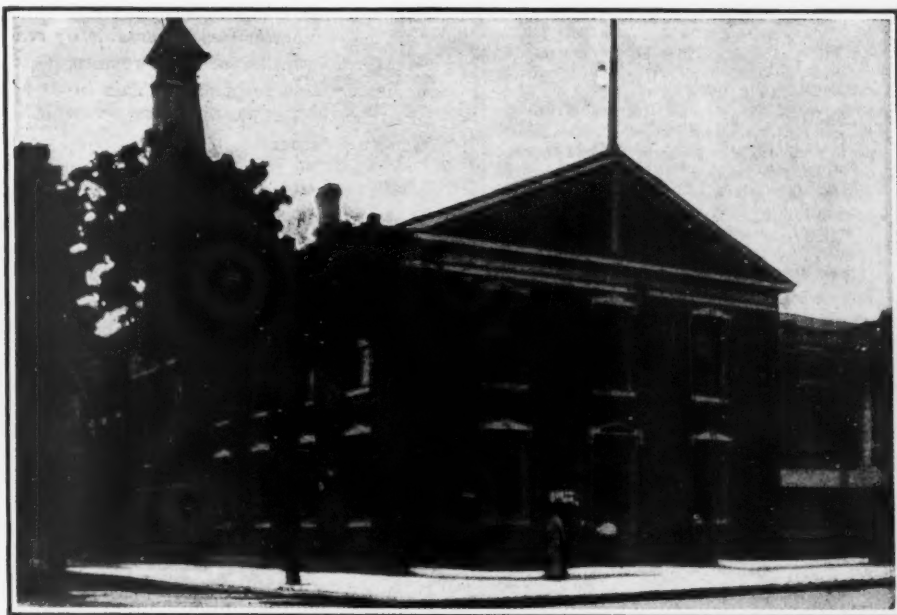
Effect of the war is shown in the exports to Canada, the returns showing that during March, 1914, the number of cars shipped to that country was 500, valued at \$531,029, while in March last, the number had decreased to 345 and the value to \$317,516. During the 9 months' period the number decreased from 2,555, valued at \$3,471,086, in 1914, to 2,072, valued at \$2,553,942, in 1915.

Other countries show losses all along the line. Mexico's imports of American cars fell from twenty-one, valued at \$24,139, in

March, 1914, to nine, valued at \$4,861, in March last, while during the 9 months' period the number fell from 154, valued at \$241,667, in 1914, to fifty-eight, valued at \$59,635.

In March, 1914, 129 cars, valued at \$114,276, were exported to South America, while during March last the number increased to 205 and the value decreased to \$96,599. The 9 months' period shows a loss from 1,592 cars, valued at \$1,614,860, in 1914, to 808 cars, valued at \$434,051, in 1915.

See America First — • • • See America Now



EDITOR'S NOTE—This is the twenty-seventh of a series of illustrations and thumb-nail sketches of the scenic and historic wonders of America to be published in Motor Age for the purpose of calling the attention of motorists to the picturesque points of interest in their own country.

NO. 27—OLD COURT HOUSE AT BEARDSTOWN, ILL., ASSOCIATED WITH EARLY LIFE OF LINCOLN

Situated on the southeast corner of the public square at Beardstown, Ill., located on the Burlington Way, is an ancient court house where Abraham Lincoln, attorney-at-law, won fame in the successful defense of an alleged murderer. On August 29, 1857, James P. Metzker, a farmer in Menard county, was murdered at a camp-meeting a few miles north of Petersburg. Duff Armstrong, a young man 24 years of age, was accused of the crime. As Abraham Lincoln had worked for the Armstrongs in the thirties and was a close friend to the family, he was chosen to defend Duff, which task he performed well and took not a penny for his services. The case came to trial in the Cass county court in May, 1858, and Duff Armstrong was set free after being acquitted by the jury. One Charles Allen was the chief witness for the state. He claimed to have seen Armstrong kill Metzker with a sling-shot. The crime was committed about 10 p. m. and Allen swore that he, though several rods away, plainly saw the deed by the light of the moon. In defense, Lincoln sent to a drug store and secured an almanac and proved to the jury that there was no moon that night. Allen's testimony was discredited and Armstrong was acquitted. That old court house, then the county seat of Cass county, is now the city hall of Beardstown. The court room is arranged and seated exactly as it was at the time of that famous trial. The drug store still is occupied as a drug store. It was in Beardstown that Lincoln enlisted in the Black Hawk war. He walked the streets of Beardstown barefoot and with a coonskin cap on his head with the tail hanging down his back.

Hitting the Hoosier Trail

How to Get to Indianapolis for the 500-Mile Race— Seats and Parking Spaces

NEXT week, Indiana's highways will be crowded with tourists to the annual 500-mile race at the capital. For the benefit of those who will drive to the Indianapolis speedway this year, Motor Age offers below data as to the conditions of the roads on various routes to that city. On the opposite page will be found a map, showing established motor routes within a

radius of 250 miles of Indianapolis. The best routes from the leading cities shown on the map are briefly outlined below, that motorists may acquaint themselves with the most satisfactory roads and plan their trip over highways that will offer them the least resistance and the greatest pleasure.

Besides the foregoing route information, data on local road conditions in various localities will be found. Garages and motor clubs have been asked to furnish such details of their local conditions as will be of benefit to motorists and help them to avoid delays occasioned by going over roads made more or less impassable by reason of the weather or road repairs, and many have responded. This information will aid in making detours,

so that parts of established routes, now in bad condition, can be avoided. The source of this information also is given and further details may be had by making inquiry of those clubs and garages from which the data has been obtained, when reaching their towns.

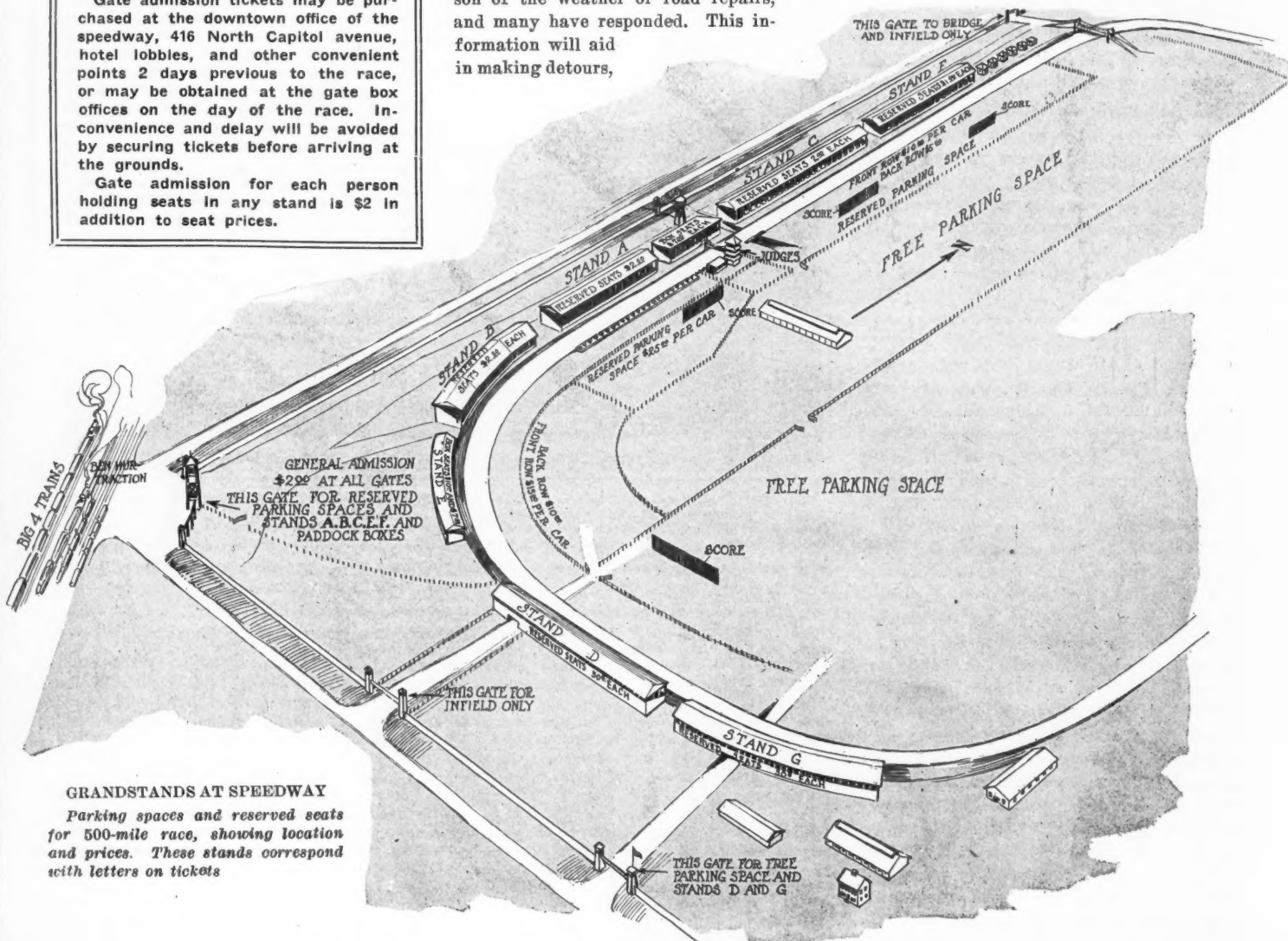
There also will be found directions for reaching the speedway after arriving in Indianapolis, as well as the best and quickest way to find seats and parking spaces at the track. Every effort has been made to aid those who will make the trip by motor, in planning their routes in such a way as to eliminate traveling over

GATE ADMISSIONS

Each reserved seat and parking space ticket must be accompanied by general admission tickets for each person.

Gate admission tickets may be purchased at the downtown office of the speedway, 416 North Capitol avenue, hotel lobbies, and other convenient points 2 days previous to the race, or may be obtained at the gate box offices on the day of the race. Inconvenience and delay will be avoided by securing tickets before arriving at the grounds.

Gate admission for each person holding seats in any stand is \$2 in addition to seat prices.



GRANDSTANDS AT SPEEDWAY

Parking spaces and reserved seats for 500-mile race, showing location and prices. These stands correspond with letters on tickets

unsatisfactory roads as much as possible. It can be taken for granted that Indiana roads will be good, no matter what the weather conditions. Those indicated on the following page are all either macadam or good gravel, little affected by rain.

Certain changes in stands, entrances, parking space and seat and admission prices have been made at the Indianapolis

SEATS AND PARKING SPACES

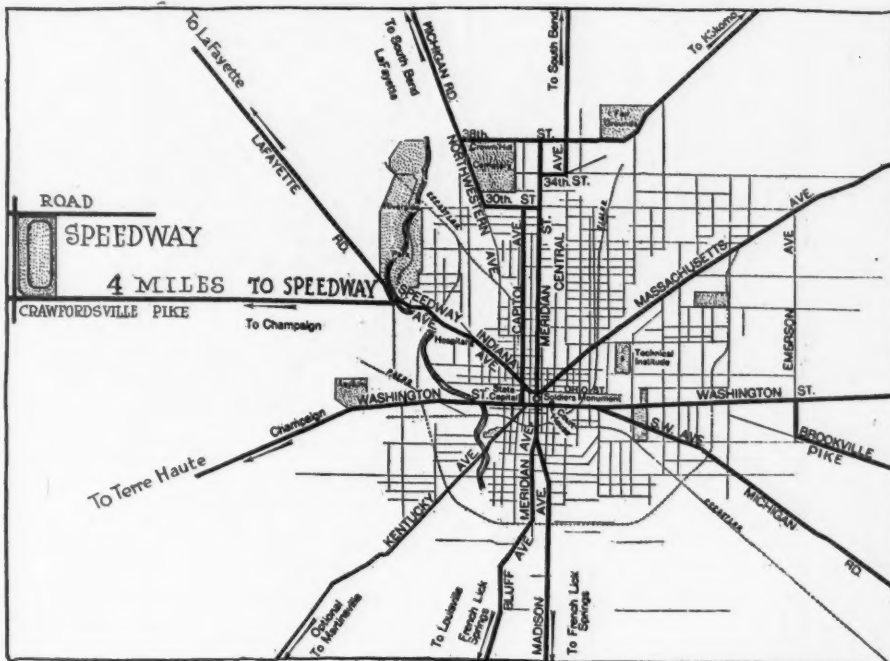
Box seats in the front of stands A and B are \$10 each; in the paddock, \$7 each. Stand E has boxes only, the front rows being \$10 a seat and the back rows \$7 a seat. Back of the boxes in stands A and B are reserved seats at \$2.50 each. Seats in stand C are \$2 each; in stand F, \$1 each; in stands D and G, 50 cents each.

Parking spaces on the main stretch are \$10 for front row and \$5 for back row; in front of pits \$25 each; on the southwest turn, \$15 in front row and \$10 in back row.

Those holding seat coupons in stands A, B, C, E, F, paddock and club stands, enter gate A; in stands D or G, gates B or C. Those holding reserved parking space may enter at any gate; while those who wish to use the west portion of the free parking space will enter at gates A, B or C. For the east portion of free parking space, use gates B or C.

Motor Speedway since last year, consequently Motor Age gives herewith a corrected diagram of the course and such other information as it thinks will be of value to those who contemplate a motor trip to the 500-mile race to be held May 29.

Heretofore the field gate admission has



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MAP OF INDIANAPOLIS WITH ROUTES TO SPEEDWAY AND OTHER POINTS

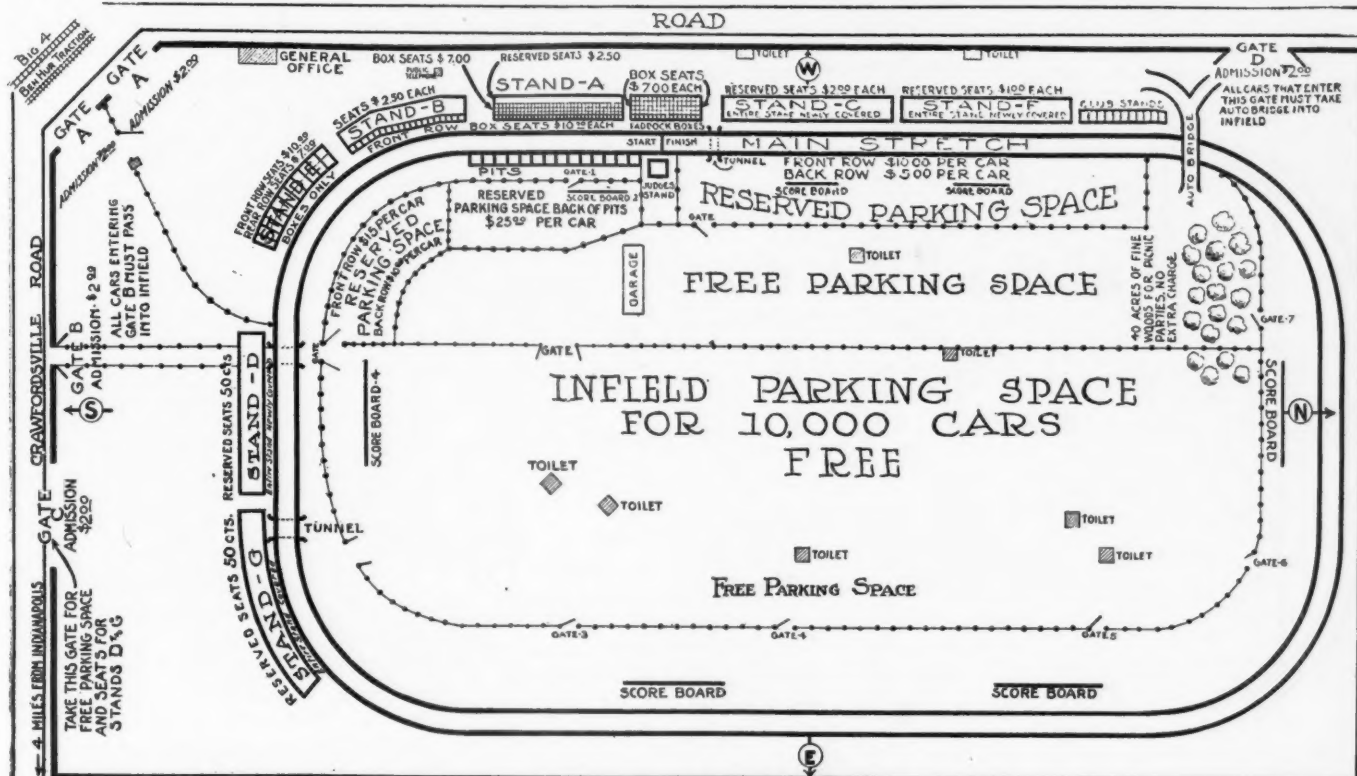
been \$1, whereas, this year, the admission at all gates is \$2 for every person, whether entering in machines or on foot. One new stand has been added at the south end of the track and all of the stands now are covered.

Reservations for seats and parking spaces should be made as early as possible and the Indianapolis Motor Speedway, to which all remittances should be made payable, suggests that first, second and third choices should be specified when making reservations. Tickets will be forwarded to

purchasers as soon as the order is received, but care should be taken to give correct

TO REACH THE SPEEDWAY

Starting from Soldiers' monument, go north one block on Meridian street; turn left at postoffice on Ohio street; go one block and bear diagonally right into Indiana avenue. Just after passing Iron bridge bear left on Speedway avenue; cross two railroads and turn sharply to the left, crossing concrete bridge, then bear right to speedway.



PLAN VIEW OF INDIANAPOLIS SPEEDWAY

Map Showing Touring Routes to Indianapolis for Speedway Race, May 29



mailing instructions, as the management will assume no loss of tickets in the mail. No refunds will be made, but in the event of a postponement of the race until May 31, or some subsequent date, all tickets will be honored.

In stands A and B, the first row of squares as shown in the diagram, five

boxes, seating six persons, but it is not necessary to purchase entire boxes—any number of box seats from one up will be sold.

By referring to the diagram herewith, locations of reserved parking spaces with prices will be found. Two prices prevail as between front and back rows in all

reserved parking spaces, except those directly in front of the pits. There is ample free parking space for any number of cars that may be there. Reference to the diagram will enable seat holders to determine which gate brings them nearest their respective location and save them time upon arrival of the saucer of speed.

Best Roads to Indianapolis and the 500-Mile Race

Routes to Hoosier Capital from all Points, North, South, East and West,
Within a 250-Mile Radius of the Shrine of Speed

BELOW are given the best routes to the Indianapolis motor speedway within a radius of 250 miles of the Hoosier capital. On the opposite page is shown a map giving the established routes covered by the explanatory data herewith. Elsewhere will be found up-to-the-minute details of actual road conditions in various localities, secured at the solicitation of Motor Age from garages, motor clubs and individuals thoroughly familiar with any changes in road conditions in their respective districts.

From Chicago, Crown Point and Lafayette

There are various possible connections, but the old and better known route through Crown Point, Rensselaer and Lafayette, as heretofore, will get the bulk of travel. Roads will be found generally good. They are all gravel or macadam, except a very few miles between Thayer and Rensselaer. Wet weather will not seriously affect them. The distance on this is 197 miles.

Those who wish to avoid the congestion of travel on this route, especially if they spend more than 1 day for the trip, will find two excellent options. One is to go east on the South Bend route through Hobart and Valparaiso to La Porte and then south through Knox and Winamac to Logansport, then direct to Indianapolis via the Michigan road or over to Kokomo and then down. The distance on this routing is 220 miles—all hard road. Another routing is via Morocco, Fowler and Attica to Crawfordsville and then to Indianapolis. The distance on this route is about 215 miles.

Another good way is to go on direct route to Lafayette and from there to Crawfordsville. For those desiring to stay over night at either Lafayette or Crawfordsville, this is a good way, as the route from Crawfordsville into Indianapolis passes the speedway and it is not necessary to go into the congestion of the city at all.

From Milwaukee

Although considerable improvement has been effected on the short route between Milwaukee and Kenosha, there are a few miles just north of Waukegan that are poor, and especially in dry weather the better route is through Franksville and Corliss or via the Kilbourn road. Both

meet at a point just west of Kenosha and follow what is commonly called the Green Bay road, almost straight south through the edge of Lake Forest, meeting the shore road at Fort Sheridan. This is followed to a point just north of Glencoe, where the inside road, following along the railroad on the west side all the way to Evanston, is preferable. From Evanston down, Sheridan road is in excellent shape to Chicago. From here on, follow one of the routes outlined from Chicago to Indianapolis.

From Madison and Janesville

Here again there are many opportunities for optional routes, but it is believed the most direct is about as good as any, and with the exception of 2 or 3 miles near Harvard, this is gravel, with some macadam all the way. It passes through Janesville, Harvard and Algonquin, coming into Chicago on the Higgins road. From Chicago on, follow one of the routes outlined in the Chicago to Indianapolis routes.

From Clinton, Ia., and Dixon

There is not much choice of routes here, as the best road will be via the Lincoln highway through Sterling, Dixon and Rochelle clear into Chicago, although some will branch off at Geneva, following the Lincoln highway through Aurora and Joliet to Dyer and then to Crown Point, picking up one of the Chicago routes at that point. Those who are especially desirous of avoiding the congestion of travel out of Chicago might come down to Davenport and then follow one of the routes outlined below from there to Indianapolis. This is practically all dirt road, however, and in wet weather would not be anywhere near as good as the ones outlined.

From St. Louis and Terre Haute

The most direct route, of course, is via the Old National road through Vandalia, Effingham and Terre Haute. Although there seems to have been in the past an entire lack of interest in road improvement through this section, the work of the last few months seems to indicate that though most of it is a dirt road, it will be kept in much better shape this year. Of course, from Terre Haute on the roads are all hard. The distance on this route via the National road all the way is 243 miles. The National road through Brazil

is worn in some places and quite a few prefer to go up to Rockville and then in via Danville.

Another route which is gaining some favor, on account of the lack of interest along the National road through Illinois, is to go through Edwardsville to Litchfield and then east through Hillsboro, Pana, Shelbyville and Mattoon to Paris. Here it is possible to go into Terre Haute and meet the National road there or direct through Clinton to Rockville and then into Indianapolis via the Pikes Peak route. The distance on this is about 295 miles.

From Davenport and Peoria

This routing will take care of travel from Galesburg, Peoria and Bloomington and is a very direct route through those points. At Bloomington there is a choice of routes—one via Lafayette and the other via Champaign. The better roads are on the latter, although distances are about the same. Roads are for the most part dirt to the Indiana line. They are all well-traveled roads, however, and should be in excellent condition for the Memorial day travel.

From Quincy and Springfield

On account of the increased interest in the Pikes Peak Ocean-to-Ocean highway, it is believed that the best routing from Quincy to Indianapolis is to go down through to East Hannibal and then go east on the Ocean-to-Ocean highway through Jacksonville to Springfield, continuing direct through Decatur and Rockville to Indianapolis. While most of this in the Illinois section is dirt road, it is generally well cared for. The total distance from Quincy is 323 miles, while it is 198 miles from Springfield to Indianapolis.

From Louisville

With the organization of the Dixie highway improvement between New Albany and Scottsburg is sure to take place at an early date, but it is doubtful if any of this materially will affect the conditions for travel on May 29. This part, which always has been a bugbear to the direct route, is not bad enough to cause any serious difficulty except in very wet weather, when there is some low ground which would be fairly bad. The option indicated via Salem is about 10 miles longer and, while



BIRD'S-EYE VIEW OF
INDIANAPOLIS MOTOR
SPEEDWAY

not to be compared with the fine gravel road north of Seymour, it is a little better than the direct route through Scottsburg. Here, too, in wet weather one or two places would be bad.

From Grand Rapids and South Bend

The most direct routing here is the best and passes through Kalamazoo, Decatur and South Bend, with an option from Rochester south, as indicated on the map. There is very little choice in these two routes. The more direct is through Logansport via the old Michigan road. Considerable improvement has been effected on this recently, although there are still a few short stretches in need of resurfacing on the option to Peru and Kokomo. This is all good, except about 10 miles between Rochester and Peru. This is soft, gravelly dirt—some parts rather rough. There is very little difference in mileage. The total distance from Grand Rapids is a little over 250 miles either way.

From Detroit and Fort Wayne

On account of the improvement now under way between Monroe and Toledo, those going to Indianapolis for the races will probably find it advisable to go via Ypsilanti, Adrian, Bryan and Fort Wayne. Eighty-five per cent of this is gravel or macadam with, of course, concrete nearly all the way to Ypsilanti. Between Fort Wayne and Indianapolis there is a choice of routes—one via Marion and one via Muncie, but there is very little difference in road conditions, both of them being excellent gravel with good accommodations at both Marion and Muncie.

From Cleveland and Muncie

Probably a great number of people driving through from Cleveland will come down to Columbus through Mansfield, Galion and Delaware, but it is believed

that the most direct route, with just as good road conditions, is the road to Bellevue and then to Lima via Tiffin, Fostoria and Findlay, then to Indianapolis through Celina and Muncie. There is practically no dirt on this route and most of it is excellent gravel or macadam. The distance on this routing is 315 miles.

From Wheeling and Columbus

On account of the improvement along the old National road between Wheeling and Zanesville, two or three parts of this will be closed, and at this time of year it will probably be preferable to use the slightly but longer option indicated through Cadiz, Coshocton and Newark. Ninety-five per cent of this is macadam or concrete—the last 40 miles into Columbus being especially fine. Columbus to Indianapolis is very direct, either on the old National road or through Dayton and

Eaton. Most people find the latter preferable, as it is almost as direct, with slightly better roads and considerably better accommodations. The total distance from Wheeling on this routing is 330 miles.

From Cincinnati

There are a number of good routes from Cincinnati to Indianapolis, as shown on the map, with very little choice in road conditions. All of them are over gravel or macadam. On account of congestion on the route between Richmond and Indianapolis it is believed that persons from Cincinnati will find it preferable to use the route through Rookville, Connersville and Rushville, which is slightly better than the one through Greensburg and for that reason is favored.

What They Say Along the Way

ROADS between Chicago and Crown Point are good, with the exception of a few miles just out of South Chicago; same is hard, but rough. The best route is via Hammond, Highlands, Shererville to Crown Point. Between Crown Point and Lafayette the roads are about in their usual condition, somewhat better than last year on account of the dry spring.—John H. Claussen, Meeker & Claussen, Crown Point, Ind.

The condition of the highway between Lafayette and Indianapolis is very good; between Crown Point and Lafayette 90 per cent of the distance is good, a greater

part of it being stone road, with just a little stretch of sand in the neighborhood of Thayer. We might add that the conditions of all roads this season is a little chunky, but one will find that from Chicago to Indianapolis the route through Lafayette is as good and as near as any route which could be advised.—Columbia Tire and Auto Co., Lafayette, Ind.

From Lafayette

Fine conditions all the way. Follow the Hoosier Motor Club white band telephone poles to Frankfort, Lebanon and Indianapolis. At Flackville or Thirtieth street turn to left, church on the right; going



east to Capitol avenue, brick church on southwest corner, right, turn right to downtown. Road being repaired from Thirtieth street into town on main road.—Hoosier Motor Club.

From Michigan City and Logansport

The roads between Michigan City and Logansport are generally good; between Logansport and Indianapolis, never were better. They are excellent—Star Garage, Logansport.

The road from Logansport to Indianapolis is in fine condition, with the exception of about 1 mile, and this is not bad. Follow white band poles from Logansport to Indianapolis.—Hoosier Motor Club.

From South Bend and Rochester

The road from South Bend to Lakeville, with the exception of 3 miles, is a new stone road and in good condition. From Lakeville to Plymouth, the stone road continues about 2 miles, but the balance of the road is in very poor condition. The road from Plymouth, through Argos and Rochester to Logansport, is in good condition.—O. C. Reed, President, Reed Motor Co.

For road conditions from Logansport to Indianapolis, see report entitled "From Michigan City and Logansport."—Editor's Note.

From Rochester and Kokomo

From Rochester to Indianapolis the road is in excellent condition, and should be better at the time of the race. Route by way of Peru and Kokomo on what is

known as the Range line road to Indianapolis—Leroy E. Smith, Smith Auto Sales Co.

From Detroit and Fort Wayne

Reported in very good condition. We are sending people by way of Ypsilanti, Adrian, Wauseon, Napoleon, Defiance, Fort Wayne, Bluffton, Petroleum, Muncie and Anderson. Recent travelers report entire route in excellent condition.—Hoosier Motor Club.

From Toledo and Fort Wayne

The road to Fort Wayne is in very good condition at the present time.—Compo Garage Co.

The road conditions the balance of way to Indianapolis may be found in report entitled "From Detroit to Fort Wayne."—Editor's Note.

From Lima and Tiffin

The highway from Lima to Tiffin is good all the way, with the exception of a detour, which is just at the outskirts of Lima, caused by road improvement. We will be pleased to direct tourists on this detour. The highway from Lima to Muncie is good all the way, mostly pike and gravel.—Armstrong's Garage.

From Wheeling and Columbus

The condition of the National highway between Wheeling, W. Va., and Columbus, O., is very bad at the present time, because of reconstruction work. Do not advise anyone to use this road for the next 6 months or probably a year, until the road is completed. The best route from

Wheeling to Columbus is Cadiz to Denison, 50 miles, mostly macadam and brick, with the exception of 5 miles of dirt; then through Uhrichsville, New Comerstown, Coshocton, Newark to Columbus, 103 miles. This is mostly gravel and a loam road, but generally in good shape.—T. A. Westmyer, Auto Supply House, Wheeling, W. Va.

Leaving Columbus on Broad street enroute to Springfield, Ill., the highway is good. On arriving at Springfield, keep on the same street—Main—due west to Richmond. The majority of this highway is at present in excellent condition. However, upon nearing Richmond, a few chuck holes will be encountered. The writer has just passed over this territory and is glad to find the roads at present better than heretofore.—The Motor Mart Co., Springfield, O.

Road from Columbus to Indianapolis reported in fine shape.—Hoosier Motor Club.

From Louisville

There are two routes between these cities. To my knowledge the best route is via Salem, Brownstown and Seymour, and while there is some construction work going on just now, a detour easily can be made.

There are 30 or 40 miles of very bad road on the Sellersburg-Henryville road, and the Bedford route, while in very good condition, of course, is very much longer and consequently would not be generally used, only in case of very heavy rains, it

being a pike road practically all the way.—Louisville Automobile Club.

From Cincinnati via Three Routes

It is a fine road between Cincinnati and Indianapolis via Richmond, gravel and macadam all the way.—Bethard Auto Agency, Richmond, Ind.

There is work being done on the route from Cincinnati via Greensburg. After leaving Greensburg the road to Indianapolis is in good condition. The favorite routing between Cincinnati and the Hoosier capitol is via Connersville. Road is excellent.—Hoosier Motor Club.

From St. Louis and Terre Haute

The Old National road, which is used between these points, has never been in as fine condition as it is at present, due in part to the fact that we have been constantly prodding them up along this line for the California traffic. Almost one-third of the distance between St. Louis and Effingham will be hard surfaced and completed before the last of this month, and the balance of the road, the dirt surfaced, will be kept in fine condition.—J. H. Curry, Curry Motor Car Co., Effingham, Ill.

We are pleased to advise that the Old National road between Effingham and Terre Haute is fair in good weather and very poor in bad weather. The section between Terre Haute and Indianapolis is good.—Terre Haute Auto Co., Terre Haute, Ind.

From Quincy, Springfield and Decatur

The road from Quincy, Ill., to Springfield is good generally all the way, except for a few hills. From Springfield to Decatur the road is extra good. The entire distance is marked and this makes a pleasant trip.—Welch Bros., Springfield, Ill.

The road from Decatur to Indianapolis at present is a little rough because of recent rains. The road, however, has been graded a number of times this spring and is in especially good condition. We have been over the first 100 miles several times and learn from customers driving all the way that the road is good. The route is marked with white and red stripes on posts, both at corners and through the middle of the sections. Barring heavy rains within a week of May 29, this road will be good.—Tenney & Co., Decatur, Ill.

All of these roads have been worked on and are in fine condition, good time being made. In case of rain, skid chains will have to be used in Illinois.—Hoosier Motor Club.

From Ottawa and Bloomington

From Ottawa to Bloomington, Ill., the road as a whole is not very good. What is commonly called the Bloomington road runs directly south from Ottawa to Streator, 16 miles distant. This is all gravel but quite cuppy in most places. In dry weather, however, the side road is good. The rest of the way would be heavy going if the weather was wet.

As regards the roads between Ottawa and Crown Point: Would advise reaching the hard roads of Indiana at Morocco as soon as possible. This would take one from Ottawa through Streator, Dwight, Kankakee, St. Anne to Morocco, where one would strike the hard road.

Neither of the above routes would be good if weather is unfavorable.—F. S. Prichard, Ottawa, Ill.

Illinois roads reported in fine condition by recent travelers, and will be found so unless it rains. Indiana roads very fine. Follow white band poles from Danville, Ill., to Covington, Ind., Crawfordsville and direct to the speedway. Indiana roads will benefit by rains; Illinois will be slippery.—Hoosier Motor Club.

From Toledo and Detroit

The highway between Toledo and Fort Wayne is in excellent condition. The highway between Detroit and Fort Wayne, via Ypsilanti and Bryan, is in very good condition with the exception of the distance between Alvordton and 6 miles beyond. These last mentioned 6 miles are at present being graded, so they are in rather poor condition.—Commercial Club of Fort Wayne.

From Davenport, Galesburg and Peoria

The road from Davenport to Galesburg, Ill., is in very good condition—this route is the one that goes through Woodhull and Alpha instead of Henderson. The road from Galesburg to Peoria is fair. This route traverses a number of mining towns and a section not generally kept in good state of improvement—in good weather it is a good road. Have no late information on road from Peoria to Bloomington. We have sent a number of local tourists over this route and no complaint was made about the road.—Davenport Auto Club.

From Canton, Mansfield and Lima

The highway between Mansfield and Canton is in very good condition. If the route is taken out of Mansfield by way

of Woodster, Jeromeville, Ashland and Mansfield, the roads will be found in good condition, as the dirt roads have been intelligently dragged, and there is considerable new improved roadway—this is the Lincoln way.

Between Mansfield and Lima the roads are in very good condition, and practically all improved roads, and this route for the principal part is the Lincoln way; but between Mansfield and Bucyrus, or vice versa, instead of going from Mansfield to Galion and the Lincoln way, we advise diverting by way of Crestline—in other words, Mansfield, Crestline, Bucyrus, Marion, Kenton, Lima.

Garages and hotels at Mansfield are good, and we advise tourists to inquire at Vonhof hotel for local instructions either way, and tourists will be promptly and properly directed.—Edwin G. Slough, Industrial Commissioner, Chamber of Commerce, Mansfield, O.

Detroit via Ypsilanti and Fort Wayne

In general, the road from Detroit to Indianapolis via Ypsilanti and Fort Wayne is in good condition. Between Detroit and Fort Wayne four-fifths of the road is good but on account of the rain during the last few days there are short stretches of clay roads and such as have no gravel are pretty soft. About 20 miles south of Fort Wayne there is a stretch in rather bad condition. But, in general, the road is good and if the rain ceases, it will be hard and in a most desirable condition.

The road from Detroit via Toledo, which was gone over about a fortnight ago is also in fairly good condition.—Wolverine Automobile Club.

From Grand Rapids and Kalamazoo

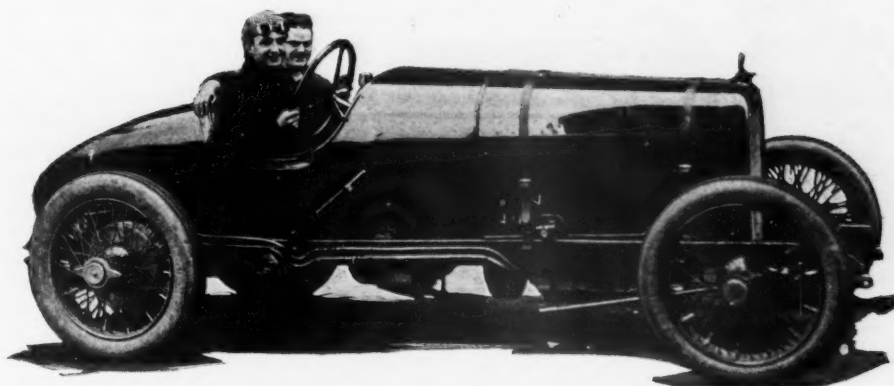
The roads from Grand Rapids to Kalamazoo are very good. This route has several miles of state roads. The roads between Kalamazoo and South Bend are what we call very good roads. There are several miles of improved roads on this section.—W. O. Harlow.

Points of Interest in Indianapolis

INDIANAPOLIS, founded in 1821, capital of Indiana, is America's largest city not on navigable water. The population in 1910 was 233,650. It is the geographical and business center of the state. The Soldiers' and Sailors' monument, a point of interest, is in the "Circle," the original center of the city, and for many years the spot on which was located the governor's residence. Four avenues radiate diagonally to the four quarters of the city. The remainder of the streets run east and west or north and south. Two squares east of the monument is the Marion county court house, on whose lawn is the General Lawton monument. Two squares west is the Indiana state house. At Pennsylvania and Sixteenth streets is the John Herron Art Institute, well known throughout the middle west. Indianapolis has about 2,000 acres of parks, scattered throughout the city. Its boulevard system, which will eventually connect all parks and traverse the banks of all streams in the city, is in course of construction. Many miles already are completed. The largest park is Riverside, best reached by going north on Meridian street to Tenth, turning west and following White river. Twelve miles northeast of the city, on the Anderson pike, is Fort Benjamin Harrison, one of the largest and most modern of the government's army posts. In the beautiful residence district in the northern part of the city are the homes of Charles W. Fairbanks, former vice-president; James Whitcomb Riley, the Hoosier poet, Meredith Nicholson, novelist, and many other celebrities.—From the Automobile Blue Book.

Drivers Burn Up Brick Oval in Practice for Hoosier Race

High Speed Shown by Cars in Early Trials Results in Prediction
that Thomas' 1914 Record Will be Broken



STAR OF THE MERCER TEAM AT WHEEL OF NEW CAR

Eddie Pullen, holder of the world's road racing record, is regarded as one of the most dangerous contenders for this year's Hoosier classic. He started warming up his mount Monday

By a Staff Correspondent

INDIANAPOLIS, Ind., May 16—Rene Thomas' 500-mile record of 82.82 miles an hour, established by the Delage driver in winning the 1914 international sweepstakes, will be broken by the victor in this year's Hoosier classic to be run on the Indianapolis speedway May 29.

Such is the common prediction of the drivers who are now at the track warming up their cars for the 500-mile race, and the rail birds, who are clocking the trials of the contenders in the pursuit of fame and \$50,000 in prize money over the grease-soaked brick track 2 weeks hence. Never before in the history of the local classic have the cars shown as high speed in practice 2 weeks before the starting bomb sounded as they have this year. Laps in 1 minute 40 seconds, a speed of 90 miles an hour, are common.

Earl Cooper, the Californian who captured the American road racing championship in 1913, has hung up the best practice record to date, but before the sun sets tomorrow, his feat may be eclipsed, as there are several cars now being worked out on the track that already are in the pink of condition and showing a world of speed in two and three circuits of the oval.

Cooper Makes Fast Lap

Cooper established his practice record this afternoon. At the wheel of one of the new Stutz entries, he covered 40 miles in 26 minutes 28 seconds, a speed of 90½ miles an hour. His fastest lap was 1 minute 37 seconds and his slowest 1 minute 42½ seconds.

The showing made by Cooper today in practice was not a surprise. The Stutz cars are considered by many of the speed fans as the most serious and dangerous of the American contenders. The new 300-inch cars have the stamina for which Stutz

is noted and look to be faster than any machine yet built by the Indianapolis maker.

The rail birds figure that Cooper will be Harry Stutz's trump card. Howdy Wilcox, an impetuous driver, will be ordered to beat it from the starting bomb in order to tease the other drivers to step on the throttle and hit a pace under which their cars will not hold up. Cooper will attempt to keep in a position of advantage, but will save his car for the psychological moment. Gil Anderson, the third member of the team, will be the ace in the hole, prepared to jump to the front should both Wilcox and Cooper come to grief. Johnny Aitken, the former National driver, who has been engaged for the 500-mile race by Stutz, will act as relief pilot and probably will be called upon to take one of the entries for about 100 miles. Harry Stutz will be pit manager, but Aitken will serve on his board of strategy.

The Stutz cars, like many of the other entries in this year's race, show the influence of the French invasion. Several of

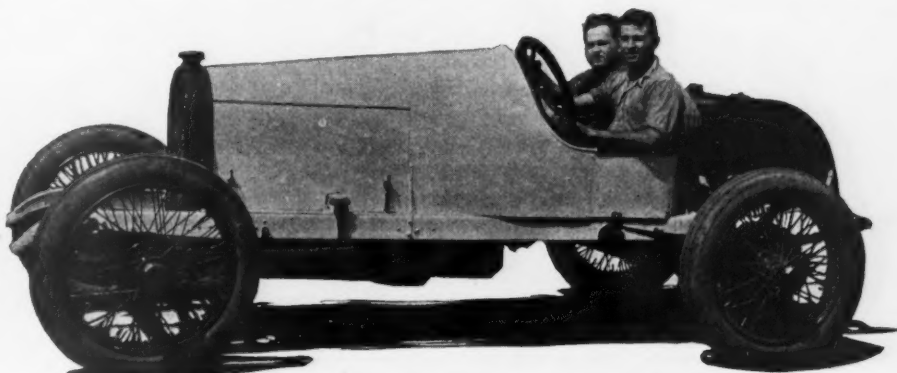
the features of the Peugeot motors have been incorporated in them and the bodies are extremely narrow, the radiator measuring not more than 10 inches across.

Although the Stutz is a native product and very popular with local fans, the foreign cars are not without their favorites and will be backed heavily. Resta's Peugeot looks especially dangerous and the winner of the 1915 Vanderbilt cup and grand prize is driving the track as if he knew every brick of the 3,500,000 with which it is paved. John de Palma, Ralph's brother, who will make his debut as a big league driver at Indianapolis May 29, has overhauled the Delage that carried Thomas to victory last year and the motor of the French car has a most menacing roar. The two Sunbeams, entered by the English maker, had not shown much until today. The drivers, Porporato and Graham, have been working on them all week and in practice this afternoon were circling the track at a 90-mile-an-hour clip.

Ralph de Palma's Mount a Beauty

Without a doubt, Ralph de Palma has the classiest looking rig in the field. It is the same Mercedes with which Louis Wagner took second money in the 1914 French grand prix and which de Palma drove to victory in two races at Elgin last August, but no one would recognize it as such at the present time. Ralph has been working on the car at the Packard shops in Detroit for the past 3 weeks and has fitted it with a new body of very extreme streamline design. The new body is much narrower than the old one, the cowl has been cut down to minimize wind resistance and the tail resembles the rear end of an airplane.

De Palma has made only one change in his equipment, having substituted a Packard carburetor for one of Mercedes make, with which the car originally was fitted. Jesse G. Vincent, chief engineer of the



ONE OF SEVERAL UNKNOWN IN 500-MILE RACE

The Sebring, built at Sebring, O., is one of the special jobs made for the gasoline derby of May 29. Joe Cooper, a Hoosier, has been named to drive the car and is now practicing on the brick oval

Packard company, not only assisted Ralph in overhauling his car but now is in Indianapolis to help the Italian to get it in shape for the race and will serve as the Mercedes pit manager the day on which the classic is run. Vincent is very anxious to see what the Packard carburetor will do in the white-heat test of the 500-mile contest. The car, as it is now equipped, has shown 3 miles per hour better time in practice than ever before.

De Palma arrived from Detroit yesterday morning. He unloaded the Mercedes, drove it to the speedway under its own power and without lifting the hood, covered a lap at a speed of 90 miles an hour on his first trial. He spent today experimenting with tires of different sizes. He already has decided on his gear ratio and to obtain sufficient engine revolutions to insure maximum power must use 33 by 4½ casings. Changing the tire sizes is an alternative to changing the rear-axle gears.

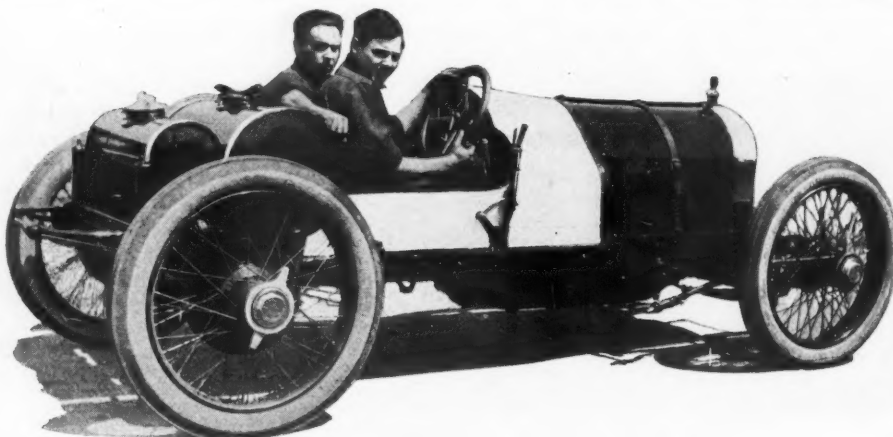
Three of the three-car teams, Duesenberg, Bergdoll and F. R. P., have not arrived as yet, but they are expected the first of the week in order to prepare their machines for the elimination trials that are scheduled for Thursday, Friday and Saturday. The following cars already are quartered at the speedway:

Cars at the Speedway

The three Maxwells, Ralph de Palma's Mercedes, Graham's Sunbeam, Porporato's Sunbeam, Cornelian, John de Palma's Delage, the three Stutzes, the three Peugeots, Oldfield's Bugatti, Sebring, Grant's Sunbeam, Limberg's Sunbeam, the three Mercers, the Burman Special, the Harroun Special, Klein's Kleinart and the Mais Special. The three Mercedes, counted on to regain the championship lost to France in 1913 and 1914, have not been seen in action as yet. The car did not arrive from Trenton, N. J., until late this afternoon and were not unloaded in time to participate in the Sunday practice.

The Maxwells made their first appearance this afternoon. Barney Oldfield warmed up one of Ray Harroun's latest speed creations, but could not get much speed out of it because it was new, and consequently stiff. There is a remote possibility that Barney may drive a Maxwell. Two of the cylinders on his Bugatti are

If the Emden Wins, Kaiser Wilhelm Will Rejoice



IF he has time, President Wilson should censure the Donaldson brothers, of Milford, Ia., for their failure to observe his "strict neutrality" proclamation. The Donaldsons evidently favor the Germans in the European clash, for they have named their Indianapolis 500-mile race entry after the torpedo boat Emden. They also are constructing another distance destroyer, the U-9, for the Sioux City meet. The Emden is fitted with a four-cylinder motor, 4¼ by 5¼, giving it a displacement of 298 cubic inches. It is equipped with a Bosch double-distributor magneto feeding Bosch plugs. A Rayfield carburetor is at present installed. The gear ratio is 2 13/20 to 1 and the wheels, Rudge-Whitworth wire, 34 by 4½, fitted with Goodrich Silvertown cord tires. Hartford shock absorbers also are in the list of fittings. The weight of the Emden is given as 2,200 pounds. Its builders expect the new car to be as hard to catch as its namesake.

cracked and unless he can have a new one made here and get the German car in shape for the grueling grind, may switch his allegiance from the kaiser to Ray Harroun at the proverbial eleventh hour. After testing the Maxwell this afternoon, Oldfield suggested several changes that he wanted made in the car, and after this work has been done, will take it out for another prep.

Harroun Has Bone to Pick

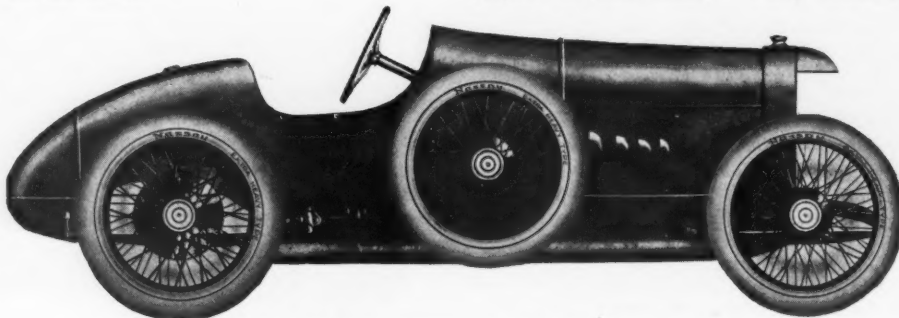
The representatives of the American Automobile Association, David Beecroft and F. A. Crosselmire, will have two controversies to settle upon their arrival in Indianapolis. Ray Harroun has instigated one. In order to get a definite interpretation of the A. A. A. rule that specifies that "not more than three cars of any one make can start in any race," the Maxwell engineer has declared that the machine entered by him under the name of the Harroun Special is a Maxwell in every respect but the name.

Should such a confession result in the disqualification of the Harroun Special, the A. A. A. representatives may have to take similar action against Burman's car, a reconstructed Peugeot that was entered first as the Burman Special and then as the Burman Peugeot. Harroun claims that a car should be named when it is originally assembled and that such a name should stand for all time, despite changes that may be made in the motor or chassis. He also favors a revision of the A. A. A. rule that will permit five cars of the same make to start, instead of three, as is now the case.

Several of the drivers also will call upon the A. A. A. officials to make a ruling regarding the right of one driver to qualify a teammate's car. There is some talk here that Resta will drive all three Peugeots in the elimination trials, provided Babcock and Bragg cannot get enough speed out of them. Bob Burman set a precedent last year when he relieved Louis Disbrow at the wheel of the Burman Special and qualified it on the third trial, after Disbrow had failed to get sufficient speed out of it to put it among the field of starters.

Two Without Drivers

Two cars as yet are without drivers, the third Duesenberg entry and the third Maxwell. The Peugeot team has been completed by the signing of Caleb Bragg last week to take the car in which Galvin over-turned in practice, injuring its driver and mechanic so badly that they will not be in shape to participate in the chase for the \$50,000 in prize money. Percy Graham,



RALPH MULFORD'S ENTRY IN HOOSIER CLASSIC

The former star of the Lozier team and winner of the 1911 Vanderbilt cup has named a car of his own design for the 500-mile race. The machine resembles in several respects the French Peugeot

who was sent from England to be Porporato's teammate in the second Sunbeam, is an English sportsman who has participated only in amateur events on the Brooklands track. He was substituted for Jean Chassagne, who could not make the trip because of a rush of work on war materials at the Sunbeam factory. Joe Cooper, an unknown, will be at the wheel of the Sebring.

Wheeler & Schebler, manufacturers of the Schebler carbureter, have hung up \$2,000 in prize money for the 500-mile race, to be divided as follows: \$1,000 first, \$500 second, \$300 third, \$200 fourth. The winning cars must be equipped with Schebler carbureters.

SHEEPSHEAD BAY SPEEDWAY WORK

New York, May 15—Although nothing definite has been announced, it is generally understood that the Sheepshead Bay motor speedway will be opened October 2 by a big race, the details of which have not been announced. Work is progressing rapidly on this speedway at the present time. Seven hundred men are at work and three-quarters of the grading has already been completed and one-quarter of a mile of concrete sleepers which will support the track on the straightaways are in place. The steel work which will carry the wood track on the bankings is coming through on schedule and it is expected that the entire supporting frame work to carry the track will be ready so that the laying of the wood surface can begin June 15.

Carl G. Fisher, founder of the Indianapolis speedway, has been elected president of the corporation.

Chicago Automobile Club Will Conduct First Speedway Race

Association that Promotes Annual Event at Elgin to be in Charge of Inaugural Event Run on the Windy City Board Track June 19

CHICAGO, May 14—By a contract signed today by President J. T. Brown of the Chicago Automobile Club and David F. Reid, president of the Speedway Park Association, the C. A. C. is given complete control of the first 500-mile race to be held on Chicago's new speedway June 19. The contract provides that the club shall have "absolute and exclusive control of the track, pits, judges' stand and appurtenances thereto and all parties working thereon or therein on the nineteenth day of June and in the preliminary practice for the race." The local club is to receive for this service the sum of \$1,000.

Guarantee of the purse of \$54,000, the largest ever offered for a motoring event, is provided by the stipulation that it be placed in the hands of the referee 4 days prior to the race. The contract also calls for the completion of the track by June 5. According to the contractor, the surface will be ready for practice by June 1.

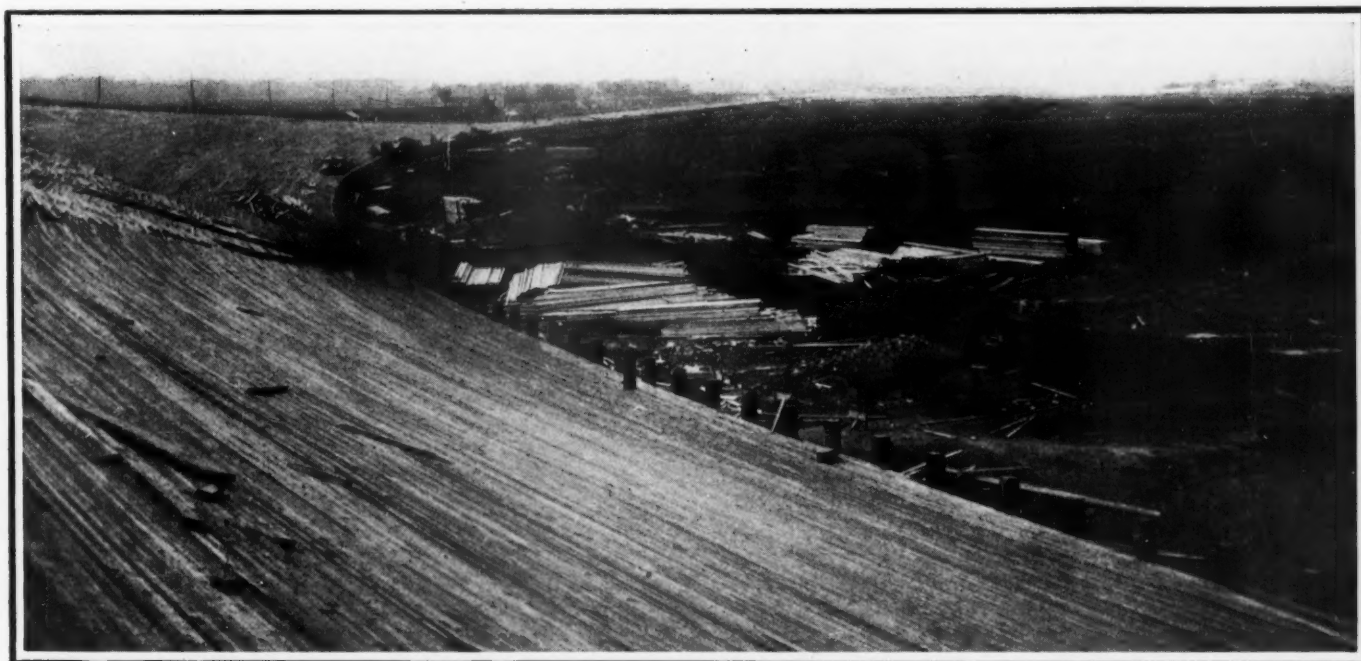
TWIN CITY SPEEDWAY BEGUN

St. Paul, Minn., May 17—Work has begun on the speedway of the Twin City Motor Speedway Co., near Fort Snelling. The first sod was turned by Mayor Powers,

of St. Paul. Representatives were present from the Minneapolis Civic & Commerce Association and the St. Paul Association of Commerce. The contractors will move 200,000 cubic yards of dirt at a cost of about \$30,000. Two million feet of dimension timber has been ordered and 50,000 barrels of concrete. The track is to be completed by August 15. The first race is planned for the first Saturday in October. A Twin City 500-mile classic will be run annually, and another race July 4, 1916, and thereafter each year, according to the plans of the promoters.

MINNESOTA STATE FAIR RACES

Minneapolis, Minn., May 17—For the 2-day motor car races at the state fair grounds at Hamline, between Minneapolis and St. Paul, next fall, a purse of \$12,000 has been voted by the directors. The fair is September 6-11. The races will be September 8 and 11. It is the largest sum ever spent on this track for a race program by motors. Supervisor Charles Patterson and Superintendent J. R. Hickey will attend the Indianapolis race to interest drivers. The program will be made for a 150-mile or 200-mile race. The track is a 1-mile dirt oval.



ONE OF THE TURNS OF THE NEW CHICAGO SPEEDWAY THAT IS NEARING COMPLETION

More than one-half of Chicago's 2-mile board track, which will be dedicated with a 500-mile race June 19, has been built and the engineers and contractors are confident that the oval will be ready for practice at least 2 weeks before the inaugural event is scheduled to be run.

Historic Cactus Derby Is Doomed

Arduous Road Race Across the Western Desert Probably Will Not Be Held This Year Because of Opposition

LOS ANGELES, Cal., May 14—It is hardly probable that there will be another Los Angeles-Phoenix road race. Divided sentiment regarding the annual event exists at Phoenix, and it is generally believed that the great desert classic has passed to the realm of things remembered.

Only a short time ago, Los Angeles sportsmen tried to stir up enthusiasm and promote a great desert dash for 1915, but there was not enough support to make the project a go.

Phoenix always received the benefits to be derived from the classic. The start was all that Los Angeles had and it was usually at an hour when the population was asleep. Leon T. Shettler did most of the heavy work at Los Angeles, and George Purdy Bullard, A. A. A. representative at Phoenix, looked after the business at the finish. There would have been no race last year had not Shettler and Bullard gone into the field and personally made the race.

Phoenix Is Antagonistic

Factional strife has arisen in Phoenix over the project of the race. There is an element which is antagonistic to the race and Bullard. These do not see that the Arizona capital derives any benefit from the event and seem to believe that Bullard works in the interests of the race only for the glory which he shares with Shettler when the affair is a great success.

The proposed run from Los Angeles to El Paso has met with little enthusiasm and it is believed that Phoenix will buck such a proposition, as she wants the finish. There is another reason for the hostile attitude of the Phoenix people. They want the race to be run over the southern route, the Ocean-to-Ocean highway, as this touches at Phoenix, while the race last year was over the northern route, with a cut-off run to Phoenix.

There was only a little interest in the race at Phoenix last year and when the members of the Howdy Special started out to celebrate, as they had always done in the past, the Phoenix police force showed up and put a stop to the racket. As a result, the Howdy crew left piqued, and it will be a hard matter to get up another Howdy Special, the real life of the race.

The purse offered for the Phoenix winner in the past will no longer attract the stars of the racing game and now that Oldfield is the latest Phoenix winner, lesser lights than the real speed kings will not attract enough attention in the west to make the race a success. There was a time when the sportsmen of the southwest entered the Phoenix race for sport alone and spent more money preparing for the

event than they could win, unless they captured first honors, but the desert racers want a real purse now and it will be hard to raise the amount necessary to attract the stars.

There is another obstacle in the way of the Phoenix race. The supervisors of the southern California counties say that they will not grant a permit for the race to be run over the county roads.

It has been proposed to have a race to Salt Lake City as a substitute for the Phoenix race. This is hardly practical, the local dealers claim, as the route is too long for a 2-day race and too short for a 3-day run. Besides, it would be hard to raise more than \$5,000 along the route, and \$5,000 would not be a large enough purse for the 1915 desert classic.

TAKING LINCOLN WAY MOVIES

Detroit, Mich., May 15—Perpetuation of the Lincoln highway historic and scenic points, through the aid of motion pictures, is to become a reality this year. Three cars started from New York today to secure important road data of interest to motorists, and to take motion pictures. Tourists on the way to the fairs will find themselves in the way of the camera. H. C. Osterman, consul at large for the Lincoln Highway Association, will direct the tour.

BANKRUPTCY PETITION FILED

South Bend, Ind., May 15—W. H. McIntyre, of Auburn, Ind., manufacturer of motor cars, has filed a voluntary petition in bankruptcy before United States Commissioner Thomas J. Logan in the federal court. He schedules his liabilities at \$183,440.49 and his assets at \$5,015, \$600 of

which he claims is exempt under the bankruptcy laws of the United States. Mr. McIntyre, who is one of the best known business men in northern Indiana, was identified with many enterprises at Auburn during the time he lived there. In his petition he says that he is a manufacturer's manager by occupation, although the business with which he is identified is not mentioned. The indebtedness is mostly in notes held by different banks.

STUDEBAKER CARAVAN TO COAST

San Diego, Cal., May 15—Studebaker owners of Arizona will tour to California to visit the expositions, according to an announcement made here. More than 150 owners of Studebaker cars have joined the motor caravan which will visit the two great California fairs.

The greatest number of the visitors will travel over the Ocean-to-Ocean highway route, from Phoenix to Yuma and through the Imperial Valley to San Diego, visiting the Panama-California exposition before driving north to Los Angeles and then on to the Panama-Pacific exposition at San Francisco.

The residents of northern Arizona will travel over the Santa Fe-Grand Canyon-Needles route to Los Angeles.

MAP OUT S. A. E. CRUISE

Detroit, Mich., May 15—The itinerary of the summer meeting of the Society of Automobile Engineers, which will consist of a cruise from Detroit through the islands of Georgian Bay and return to be held June 14-17, has been definitely decided upon, the schedule being as follows:

June 14—Leave Detroit 2 p. m.

June 15—Arrive Midland 2 p. m.; leave Midland 2:15 p. m.; arrive Parry Sound 6 p. m.

June 16—Leave Parry Sound 9 a. m.; arrive Point au Baril 12 m.; leave Point au Baril 3 p. m.; arrive Parry Sound 6 p. m.; leave Parry Sound 6:15 p. m.

June 17—Arrive Detroit 5 p. m.

The steamship Noronic will carry the engineers from Detroit to Midland and pick them up at Parry Sound for the return to the hub of motordom.



CHALMERS EMPLOYEES WERE TAKEN TO WORK WITH MOTOR TRUCKS DURING STREET CAR STRIKE AT DETROIT.

From the number of advance reservations being received, it looks as if the 1915 summer meeting will establish a record for attendance and that the cruise will be much more popular than the 1914 session at Cape May, N. J., which was too far from the center of the industry to attract a representative gathering from Detroit and Indianapolis.

GOTHAM TAXI LAW ENJOINED

New York, May 14—The public hack ordinance's amendment requiring that all public taxis should carry taximeters to distinguish the private from the public taxicabs, has been enjoined temporarily through a decision issued by Justice Crane in the supreme court in Brooklyn. This injunction against the city prevents police officers from arresting chauffeurs of three taxicab companies while driving their cars without taximeters. In the argument on May 21, the companies will try to show that taxis used for private service ought not to be classed with the public hacks that wander about the streets looking for fares.

COMPANY MUST SAFEGUARD POLICY

St. Louis, Mo., May 17—The ruling that motor car insurance companies are responsible for the safety of their policies was upheld by Circuit Judge Cave here a few days ago when he quashed the indictments against two men who had been charged with attempting to obtain money by false pretense from the Maryland Motor Car Insurance Co.

The indictment charged that the defendants had placed a valuation of \$2,750 on a motor car which in reality was worth only \$1,000 and that they had represented it was a 1913 model when the machine was a 1911 model. The suit grew out of the motor car owners' attempt to collect damages from the insurance company after the machine in question had been destroyed by fire.

Motor Cars to Rescue in Strike

Makers of Gasoline-Driven Vehicles Use Flotilla of Trucks to Carry Their Employees to Work in Detroit

DETROIT, Mich., May 15—The motor car was the most important factor in the 36-hour strike which tied up the entire street car service of this city Thursday and Friday. The street car employees declared a general strike at 6 a. m. Thursday. Word was spread to all sections of the city but in some plants preparations already had been started for such an emergency, as the strike was talked about the day before.

As a rule a large percentage, probably 70 to 80 per cent of the workmen, live within walking distance of the shops where they are employed. Nevertheless a good many of the employees of the offices had to come from distant homes and for these the factories started special service.

The Chalmers Motor Co. used about ten trucks with and without trailers. Also every available passenger car, about fifty, and about twelve Chalmers chassis upon which temporary wooden platforms were fitted. The vehicles were directed to specified places and employees were notified by telephone or otherwise and were taken aboard and brought to the factory. To take the employees home, a routine system was organized towards all parts of the city and suburbs. All employees were given a red tag, which they had to fasten to their coat and which was an identification for drivers to take on the bearer.

The Ford Motor Co., besides using every available car it had at the plant, chartered two trains of five coaches each to bring several thousand employees to the Highland Park plant from outlying districts. Two score trucks and a large number of passenger cars were used by the Packard Motor Car Co., the Cadillac Mo-

tor Car Co., used a dozen trucks and forty cars; the Studebaker Corp., twenty-two trucks and over fifty passenger cars.

By 10 o'clock, or 4 hours after the strike had started, improvised jitney buses began to swarm Woodward avenue, which is the main thoroughfare of the city. At first some of the drivers charged 50 cents for a trip from the city hall to the Ford plant—7 miles—and while a few persons did not seem to mind the half dollar, most people kicked at such a high rate. A rate of 25 cents later was established. By noon, practically every fifth car driving on the avenue had a sign of some sort.

All these improvised public service vehicles were by no means confined to the regular cars for hire. There were in fact many more privately-owned cars, including, as was noted by the writer in two stances, cars listing at over \$4,000.

Probably the most striking feature in connection with the strike was the exceedingly small number of accidents. In fact, according to the police traffic department, only two cases were reported during the 36 hours the strike lasted. In both cases the drivers failed to slacken their speed when near a street crossing and thus collided with another car. However, only the cars were the sufferers.

PLAN FOR INTERCLUB MATCH

Chicago, May 15—The eighth annual interclub match, in which teams representing the Chicago Automobile Club and the Chicago Athletic Association participate each spring, has been scheduled for June 11-12. Fort Wayne, a run of 165 miles from Chicago, will be the night stop and LaPorte and Plymouth, Ind., will serve as noon controls.



TRUCKS AND TRAILERS USED BY PACKARD COMPANY DURING TRACTION STRIKE

Many New Cars Are Announced for Coming Season

Preliminary Specifications of 1916 Models of Oakland Four, Willys-Knight, and Two New Ones, the Farmack and Bell—Monarch Co. Reorganizes

PONTIAC, Mich., May 20—This week the Oakland Motor Car Co., this city, makes public the details of its four-cylinder model for 1916, which is the successor of model 37. It is designated as model 38, and is to sell at \$1,050 in either roadster, touring car or speedster type. This price is \$150 lower than the previous model touring car, and \$100 less than that of the model 37 roadster.

Changes either mechanically or in the body are slight, though they do their part to add to the efficiency of the car. The general design, however, of chassis and bodies is the same as it was. By redesigning the clutch, the power plant has been shortened 2 inches, making a more compact unit. That is, this added clutch compactness allows the gearbox to come 2 inches nearer the engine proper.

Outwardly, the radiator, hood and cowl have been raised 1 inch, which adds to the lines of the car. In the driving compartment, more room has been secured by deepening it so as to give 2 inches more leg space. It also has been widened 2 inches. Due to these changes, the car has a larger front appearance.

Other body details that have come in for revision are the replacing of the former metal running boards with the linoleum-covered variety, while a neat combination of the metal instrument board with the body—also of metal—lends to the appearance in this particular. The Oakland motor is of Northway make, and is a 3½ by 5 detachable head, block type, with clutch and gearset in unit. The Stewart vacuum feed is retained, as also the Marvel carbureter and Delco combination ignition, starting and lighting system. The attractive V-shaped radiator also is used, and the unique oilless rocker bearings on the brake-operating system and the gear-shifting lever are still being successfully adhered to.

NEW WILLYS-KNIGHT UNDER \$1,200

Toledo, O., May 14—A Willys-Knight car to sell for less than \$1,200 will be brought out shortly by the Willys-Knight interests of the Willys-Overland Co. This model will be a new car throughout and will be the first Knight-engine car to be marketed under \$1,400. Joseph H. McDuffee has been appointed general representative for the Willys-Knight interests of the company and will devote his entire time and attention to promoting the sales of the new car.

MONARCH REORGANIZATION

Detroit, Mich., May 17—The Monarch Motor Car Co., which started in business a year ago with a capital stock of \$30,000,

has been reorganized and its capital stock increased to \$400,000. Eastern capitalists are backing the company, with incorporation under Delaware law.

R. C. Hupp, who has been president since the concern was started, remains as such. Arthur Frost Spaulding, of Spaulding, McClellan & Co., is vice-president; George B. Turner, formerly of the Bankers' Trust Co., New York, is secretary-treasurer. H. D. W. MacKaye has been appointed director of sales; A. A. Lehr, director of engineering and purchases; Walter R. Bamford, production manager; G. J. Conyne, assistant production manager; J. L. Bell, service manager, and M. L. Shanks, office manager. The company is planning to enlarge the plant and to make from 3,000 to 5,000 eight-cylinder cars for the 1916 season. This car, with either a seven-passenger touring or a roadster body, will be listed at \$1,500.

STEVENS-DURYEA PLANT SOLD

Springfield, Mass., May 15—Final plans have gone through for the purchase of the Stevens-Duryea Co.'s plant by the Westinghouse Electric Co. Rifles for the allies will be manufactured and when going full time 8,000 men will be employed. Many Stevens-Duryea employees will go to work for the new owners.

NEW FARMACK CAR ANNOUNCED

Chicago, May 18—This city again is breaking into the passenger car field with the announcement of the Farmack car, made by the Farmack Motor Car Corp., 332 S. Michigan-av. While actual production not yet has been begun, it is proposed to build three models using the same chassis. The price of the touring car will be about \$750, including an electric starting and lighting system. A cabriolet, and three-passenger roadster model also will be marketed. The car as outlined will have a 106-inch wheelbase, four-cylinder, valve-in-the-head motor, 3½ by 5, cone clutch, three-speed gearset, floating axle, and 32 by 3½ tires. It is proposed to purchase the parts of standard parts makers, the axles from the Salisbury company, frames from Parish & Bingham, steering gears from Lavigne, etc. The Bijur two-unit-starting and lighting system, and Splitdorf magneto will be used. The concern states that between August 1, 1915, and August 1, 1916, 5,000 cars will be shipped, and that parts now are being received from contracts given to the parts makers.

This newly formed corporation has its head, A. J. Farmer, who was last connected with the Farmer Mfg. Co., Detroit, Mich., as vice-president, George H. McKenney, a Chicago physician, and secretary-treasurer,

M. M. McIntyre. The officers make it plain that no deposits will be accepted until production is under way. The old Staver plant is to be used as the factory, temporarily at least.

MICHIGAN MOTOR VEHICLE LAW

Detroit, Mich., May 17—Michigan's new motor vehicle law goes into effect January 1, 1916. The measure, known as the Newel-Smith law, is a radical departure from previous ones in that all cars will be taxed according to horsepower and weight. Motor cars in which steam or gasoline furnishes the motive power will be taxed 25 cents per horsepower and 25 cents per hundredweight, while electrics will have to pay \$1 per horsepower and 25 cents per hundredweight. Motor trucks will be taxed 15 cents per horsepower and 15 cents per hundredweight for steam or gasoline, and 50 cents per horsepower and 25 cents per hundredweight, if electric.

Horsepower of gasoline motors will be determined by the standard S. A. E. formula.

LOZIER'S N. Y. PLANT SALE

Plattsburg, N. Y., May 14—The Lozier Motor Co. plant at Plattsburg, valued at \$1,000,000, will be sold at public auction beginning May 25 by Charles Shongood, auctioneer at 539 Broadway, New York. The sale will include about \$100,000 worth of tools and bids will be received for about 100,000 feet of single and double-ply belting in all sizes. The raw stock offered includes about 500 tons of new iron and steel, rods, tubing, sheets, of soft and high-speed tool steel.

NEW COMPANY ORGANIZED

York, Pa., May 17—The Bell Motor Car Co., recently organized, is the latest addition to the motor car industry in this city. The new concern will engage in the manufacture of a low-priced car, selling at between \$700 and \$800, and will be incorporated at \$50,000. Operations will be started July 1 in the large three-story factory building, adjacent to the Columbia & Frederick branch of the Pennsylvania railroad and the intersection of Center street, now occupied by the Bailey Manufacturing Co., engaged in the manufacture of commercial car bodies.

The Bell car will be manufactured in two models, a roadster and a five-passenger touring car. The cars will be fully equipped. Ernest T. Gilliard, former chief engineer and designer for the Sphinx Motor Car Co., this city, will act in this capacity for the new company. The body design for the new car is now being worked out and the 1916 model will contain a number of distinctive features.

Rush Orders for Army Trucks Cause High Speed

Motor Company Closes Contract for \$1,200,000 Worth of Vehicles—Paige Plans to Double Output—Overland Aims to Build 600 Cars Daily

YORK, Pa., May 15—Within the last week arrangements were made by the Morton Truck & Tractor Co., Harrisburg, to begin work on the large war orders for motor vehicles, valued in the neighborhood of \$1,200,000, obtained from the Russian and British governments. The Morton company is also negotiating for other and larger contracts, and it is expected they will be closed shortly. Extra manufacturing facilities have been arranged with the Harrisburg Mfg. & Boiler Co. The work on these first orders will all be done in Harrisburg.

S. F. Dunkle, president of the boiler company, in speaking of the war contracts, stated that enough foreign contracts have been booked to keep the plant running at full capacity for some time.

"Up to the present, we have not turned out any of the \$1,000,000 Russian order, which is only a small part of what is to come, because we have been busy assembling material and getting things in shape. Our ordinary working force of 100 men has not been increased as yet."

PAIGE WILL DOUBLE OUTPUT

Detroit, Mich., May 15—The Paige-Detroit Motor Car Co. has decided to start immediately a large addition to its plant. When the new building is finished it will permit the company to increase its production to 15,000 cars annually. The new building will be 500 feet long, 60 feet wide and three stories in height. The capacity of the present factory is about 80 cars a day and with the additional floor space, the production will be increased to 150 cars per day. The company intends to add new machinery, including a mechanical conveyor for the final assembly of the car.

RECEIVERS' REPORT FILED

New York, May 15—Francis Gilbert, temporary receiver for the bankrupt Motokart Co., has filed his report with the clerk of the United States district court of the southern district of New York, and it has been referred to Macgrane Cox, special master, for examination, testimony and further report. Special hearing will be held May 25.

POPULAR SUBSCRIPTION TO REBUILD

Milford, Mich., May 15—Within about 48 hours the people of this city subscribed \$1,476.50 towards a cash fund of \$1,500 which is part of the conditions under which the plant of the Detroit Auto Dash Co. will be rebuilt. Experts stated that to replace the bare factory building it would require \$4,564. It was decided that during 5 years the village taxes would be omitted;

a night watchman will be furnished, also \$200 worth of labor in addition to the \$1,500 cash. F. S. Hubbell, of the city's electric plant further offered to furnish the electric current for 1 year at 50 cents on the dollar, for 75 cents on the dollar the second year and after on par, all to be based upon what the current would cost in Detroit. The new plant is to be ready within 4 or 5 weeks.

OVERLAND GOAL 600 CARS DAILY

Toledo, O., May 17—All daily shipment records from the Overland factory were broken May 10, when 414 cars were shipped. Upon the completion of buildings now under construction, the company expects to have a daily output of 600 cars. Some of the new buildings will be occupied about June 1. One of these structures is 1,000 by 200 feet, four stories high. The company is employing 9,200 men at present, some departments working day and night.

OLDSMOBILE FACTORY SWAMPED

Lansing, Mich., May 15—General revival of trade is reflected in the condition of the Olds Motor Works, which finds itself with orders greatly in excess of its capacity. Since April 1 it has been necessary to turn away orders for model forty-two cars and at the present time the factory output is sold fully a month ahead. The total business done during April showed an increase of 82 per cent over the corresponding month of 1914.

LYONS OUT OF LYONS-ATLAS

Indianapolis, May 15—J. W. Lyons, who was succeeded by E. H. Pampell in the presidency of the Lyons-Atlas Co., has disposed of his interest in that concern. Mr. Pampell is a Rock Island man.

AWARDED DAMAGES ON CONTRACT

Indianapolis, Ind., May 19—Special telegram—Cecil E. Gibson and B. F. Meixelt were awarded \$19,000 damages from the American Motor Car Sales Co. by the jury in the superior court of Marion county. Suit was brought by the plaintiffs for \$150,000 damages for alleged breach of contract. Gibson and Meixelt claimed they were Marion agents in 1909 and 1910 in Indianapolis and that the agency was taken away from them without due cause, the loss in profits amounting to the sum asked for.

According to John N. Willys, then head of the Marion concern, there always was a dispute as to whether there was a contract. It was claimed by defendant that if there was a contract, the plain-

tiffs would have been unable to sell any considerable number of cars and the defendant would have settled for a reasonable amount, possibly \$25,000. The verdict of the jury is in keeping with the defendant's contention as to the amount of damages.

DAVID M. PARRY DEAD

Indianapolis, Ind., May 15—David Mac-lain Parry, former president of the Overland Automobile Co., and the National Association of Manufacturers, and one of the most prominent business men of this state, died Thursday at his home, in this city, and was buried today. Mr. Parry, who was 63 years old, had been ill for some time and was confined to his bed for several weeks. His death was due to uremic poisoning and heart disease.

Starting in life as a poor boy and first clerking in a hardware store, Mr. Parry became nationally famous as a manufacturer. He established the Parry Mfg. Co., which became one of the most famous carriage-making plants in the country, and later became interested in the motor car industry, serving as president of the Overland Automobile Co., and also later as head of the Automobile Insurance Co. of America.

BUYS INTEREST IN OVERLAND

Toledo, O., May 18—Special telegram—Harry T. Dunn, president of the Fisk Rubber Co., since its inception, has acquired an interest and has become vice-president and a director of the Willys-Overland Co., Toledo, Ohio, and in the future will devote the major portion of his time to that organization. The personnel of the Fisk Rubber Co. and the Willys-Overland Co. will remain unchanged.

TO MARKET NEW TRACTOR

Waukesha, Wis., May 15—The new tractor designed by the Federal Bridge Co., Waukesha, Wis., formerly Modern Steel Structural Co., is now ready for the market. The tractor employs a Waukesha motor, and will sell for about \$750 or \$800. A large part of the big steel works will be devoted to the tractor business and the company is developing several other gasoline-driven machines for general utility service.

COLUMBUS BUGGY CO. SOLD

Columbus, O., May 13—At an auction sale, held yesterday and today by J. E. Conant & Co., of Lowell, Mass., the plant and assets of the New Columbus Buggy Co., were sold. A. Weber, of Louisville, Ky., purchased the buggy business and will move it to that city. Sixty-five motor

cars, including thirty-five new electrics and twelve new gasoline cars, were sold yesterday as well as all the material on hand and equipment, with the exception of the patterns for the making of parts. The company retained the patterns and will continue to furnish parts.

RECEIVER ASKED FOR MOTSINGER

La Fayette, Ind., May 13—Thomas Sharp Wilson, who recently was removed as treasurer and director of the Motsinger Device Mfg. Co., yesterday filed a petition in the circuit court asking for a receiver for the company. The latter was incorporated several years ago to manufacture the Motsinger carburetor. Wilson's petition alleges that he has \$10,000 worth of stock in the company, that the liabilities will amount to \$30,000, and the building and equipment will not bring \$40,000. The petition also alleges that Motsinger is advertising the sale of \$150,000 of new stock, in addition to the original \$150,000 for which it was capitalized.

FORD MONTHLY AVERAGE 17,395

Detroit, Mich., May 15—Between August 1, 1914, and April 1, 1915, the Ford Motor Co. agents throughout the country have received 156,561 complete cars, which is at the rate of 17,395 per month. This means that during the remaining three months of the fiscal year the Ford company must build 143,439 cars or an average of 47,813 per month, in order to complete the 300,000 cars intended to be made in the fiscal year. This is quite likely to be accomplished inasmuch as during April the production was 46,510 cars. In addition to the 156,561 complete cars shipped to the agents, the various assembling plants throughout the country have assembled about 40,000 cars during the period of August 1, 1914, to April 1, 1915.

NEW FOUR-WHEEL DRIVE TRUCKS

Detroit, Mich., May 18—Two new four-wheel drive trucks have just been announced, one by the Bollstrom Products Sales Co., Battle Creek, Mich., and the other by the Weier-Smith Truck Co., Birmingham, Mich. The Bollstrom vehicle has been tried out under actual road conditions and perfected. First deliveries will be made November 1, 1915. The Weier-Smith truck has been produced in several experimental models and is expected to be ready for the market in a few months. James V. Bayley is the Detroit agent for this truck.

ZENITH PATENT SUIT HEARING

Detroit, Mich., May 14—A hearing in the appeal of the patent suit of the Stromberg Motor Devices Co., Chicago, against the Zenith Carburetor Co., this city, was held today in the United States circuit court of appeals of the northern district of Illinois at Chicago. Decision will be rendered at the convenience of the judges.

Rivalry Over Dixie Highway

Route Now Is at Fever Heat

Nine Factories Seek Road in Indiana Alone and the Feud Extends South into Kentucky and Tennessee—

South Bend Joins With Michigan

LOUISVILLE, Ky., May 17—The keenest rivalry for the routing of the Dixie highway exists in every state which it will traverse. In Indiana, according to W. S. Gilbreath, of the Hoosier Motor Club, there are nine different routes seeking the honor of the Dixie highway.

In Kentucky there are two between Louisville and Nashville; and about five between Louisville and Cincinnati and Chattanooga, with many towns in Kentucky seeking changes in the routes suggested by their neighboring towns so as to include their town in the routing of the Dixie highway. In Tennessee there are three competing routes between Nashville and Chattanooga, and three others leading from Cincinnati, or Louisville, to Chattanooga.

As in Kentucky, there are a number of

other towns, not specified on the suggested routes, which are actively fighting for just enough of a change to include them in the route. In Georgia there are two competing routes between Chattanooga and Atlanta, which are probably putting up a stronger and more aggressive fight for the highway than any other competitive routes.

One of these is by Dalton and the other by Rome, Ga. There are three competing routes between Macon and Jacksonville, all active in the fight. Other towns are at work in an effort to secure the routing of the highway through their particular districts. Even Florida is not free from a strong rivalry for the Dixie highway, as Tallahassee and other Florida cities and towns are in competition for the routing of the highway into Jacksonville.

To strengthen its claims for the Dixie highway, South Bend, Ind., has taken up the cause of the state of Michigan, and the citizens of this city at the extreme north of Indiana, located on the Lincoln highway, have petitioned Governor Ralston of Indiana to invite Governor W. N. Ferris of Michigan to appoint two commissioners from that state to join with the present commission of fourteen with a view of extending the Dixie highway to some point in Michigan on the Canadian line.

PLAN 1,340 MILE NON-STOP RECORD

Denver, Colo., May 18—Special telegram—In an attempt to establish a record for continuous driving from Denver to Indianapolis, a party will leave here May 24 in a Haynes six. The itinerary of the trip will include Omaha, Neb., Cedar Rapids, Ia., and Chicago. The 1,340 miles will be covered in 70 hours, day and night driving, if expectations materialize. The party will consist of Charles L. Newcomb, president of the Northeastern Colorado Lincoln highway; E. J. Johnson, Haynes distributor; Charles M. Kitteridge, assistant secretary of the chamber of commerce, and Russell N. Forbes, of the Denver Post. A new car has been purchased by Mr. Newcomb and the track will be cleared by officers so that high speed may be maintained through the various cities. The party will go direct to the Indianapolis race.

SIGNBOARDING ELY TO LOS ANGELES

Los Angeles, Cal., May 15—Not content with having signboarded the National Old Trails route from Kansas City west, the Automobile Club of Southern California



PROPOSED ROUTES FOR DIXIE HIGHWAY

is making another strong bid for transcontinental motor travel by the signboarding of the road between Los Angeles and the Lincoln highway at Ely, Nev. By the middle of June it is expected that the transcontinental motor tourist who is traveling to the coast via the Lincoln highway will find at Ely an alternative route to the coast, signboarded as well as the main Lincoln highway, and showing a distance to Los Angeles some 60 miles less than the distance to San Francisco over the main Lincoln highway route.

The motoring club has just completed the preliminary work of logging the 556 miles of road between Los Angeles and Ely and making of the signs, which are to be of enameled steel, is already in progress. Through the courtesy of Earle C. Anthony, Packard distributor for southern California, "Cactus Kate," a big Packard stunt car which Anthony recently placed in service, was used on the preliminary trip. One advantage claimed by the southern Californians for their route to the coast is that it is open the year round, whereas the main Lincoln highway is closed to travel on an average of 7 months during the year owing to the deep snows in the high Sierra passes.

CLUB HAS 3-DAY RUN

Harrisburg, Pa., May 15—The publicity run of the local motor club, Monday, Tuesday and Wednesday, from Harrisburg to Wilmington, Del., by way of Atlantic City, a distance of 408 miles, was one of the most successful events held by the club. Sixty-six cars were entered in the run, thirty-nine of which had perfect scores. Awards of special prizes and silver trophies was made Friday evening at the Dauphin hotel. The total number of prizes reached 75. This breaks all records for prizes, not only for the Harrisburg club, but in the state of Pennsylvania.

The 250 participants in the run left Harrisburg at 6:30 Monday morning and reached Atlantic City late in the afternoon. The first day's run covered 179.5 miles. The second day's route covered 132.2 miles from Atlantic City to Wilmington, Del., while on the last day the tourists covered 96.5 miles from Wilmington to Harrisburg.

DETROIT GETS MORE DAYLIGHT

Detroit, Mich., May 17—Saturday the eastern standard time went in effect here. At midnight Saturday the clock in the city hall tower was set 1 hour ahead and this example was followed all through the city. Thus Detroiters now have 1 hour more of daylight.

The men connected with the automobile industry in Detroit were among the strongest boosters in favor of the change to eastern time.

The change was decided by the city council May 11, and had the approval of practically all the business community of Detroit.

Stutz Bearcat Breaks Record for San Diego-to-New York Run

Erwin G. Baker Drives Car Entire Distance from Coast to Coast in 11 Days 7 Hours 15 Minutes—Uses Same Tires All the Way

NEW YORK, May 18—Special telegram —At 10:15 this morning, a Stutz Bearcat roadster completed the transcontinental trip from San Diego, Cal., to New York, in 11 days 7 hours and 15 minutes, Erwin G. Baker driving the car the entire distance and thus establishing a transcontinental record for a single driver, as well as greatly reducing the time for a trip between the Pacific coast and the Atlantic ocean. The distance crossed was 3,728.4 miles. The trip started from San Diego at midnight, May 6, the route being by way of Phoenix, El Paso, Roswell, Emporia, Lexington, Mo., Greenville, Ill., Dayton, Greenburg, Pa., Philadelphia and New York.

The 2 first days of the trip were the greatest in mileage, the first day to Phoenix being 409.1 miles, and the second day from Phoenix to El Paso, 592 miles. On the third day, 6 hours were lost by miring in quicksand in crossing two streams and only 244 miles were covered.

Mr. Baker, although new in transcontinental motoring, has had considerable experience in cross-country traveling by motorcycle, having covered the coast-to-coast trip in 11 days 12 hours and 10 minutes by motorcycle. On the present trip he was accompanied by W. F. Sturm, of Indianapolis, as official observer, who had the car officially checked out at San Diego by A. A. A. officials, checked at the night stops with official signatures and seals, and checked at the finish by an A. A. A. representative.

The car went through the run with a single set of tires, San Diego air being in the front tires at the finish. The car is now being given an official examination by the Automobile Club of America. Its equipment included Houk wire wheels, Stromberg carbureter, Bosch magneto, Hartford shock absorbers, A. C. spark plugs, Stewart horn and Prest-O-Lite tank.

The usual transcontinental experiences were encountered on the trip. On the first day there was a sandstorm in Devil's canyon; there were 28 miles axle deep in sand and some experience with snow. The best roads were through Kansas.

Throughout the trip, Driver Baker and his companion averaged 4 or 5 hours sleep each night, generally driving until 9:30 or 10, and getting away at 4 o'clock the following morning. The Stutz Bearcat was a standard model, with four-cylinder motor, 4¾ by 5½-inch bore and stroke. It was stripped of fenders and carried a wire

radiator screen, had the springs taped, but in other respects was a standard Stutz product.

LIGHT REGULATION BRINGS ARRESTS

St. Louis, Mo., May 17—Approximately 200 men and several women drivers were arrested here during the week for violation of the new ordinance regulating motor car lights. They were charged either with carrying glaring headlights or failing to keep the rear lights on their machines burning. Each was fined \$5 and court costs, and the fine was stayed on the defendant's promise not to repeat the violation. The motorists, however, were required to pay the court costs.

JEFFERY TRUCKS IN STRENUOUS TRIP

San Francisco, Cal., May 15—Three Jeffery quad trucks that were driven from this city over the snow-capped Sierras arrived in Reno, Nev., today. About 354 miles were covered, 56 of which were over the snow-covered Sierras. Two of the trucks hauled trailers that are to be used by the mining company to which the quads were destined, and the third carried a Jeffrey touring car to be delivered to a Reno motorist.

GARAGE OWNER LIABLE

Baltimore, Md., May 15—For the protection of garage owners, employees must exercise care. This was demonstrated in Baltimore yesterday. A verdict for \$166.33 for damages to his car was awarded Austin P. Knill against the Ogden & Beehler Motor Co. Mr. Knill drove his machine into the garage and an employe was called to fill the tank. In doing so it was charged that he was careless and overflowed the tank. He then passed the dripping funnel he had used over a lighted lamp, causing a fire, which damaged the car.

DEFEAT LICENSE-RAISING BILL

Harrisburg, Pa., May 15—Governor Brumbaugh's revenue-raising plan was severely shaken this week by the defeat of a number of measures including the added tax on motor car licenses. Opposition to the proposed increase on motor car licenses developed much stronger than was expected, although various motoring associations throughout the state have been lobbying against it. The measure would have increased the license fees about 25 per cent and added nearly \$300,000 a year

to the state's revenue. The money was to have gone to the state highway department. The bill was attacked on the ground that motor cars are now taxed more than any other class of property in the interest of good roads.

MOTOR CAR INSURANCE PLANNED

St. Louis, Mo., May 15—The formation of a mutual motor car insurance exchange to insure the cars of members of the St. Louis Automobile Club both as to loss by fire or theft is being considered by the board of governors of the club. A committee has been named to investigate the project in detail.

BENZOL INCREASES IN PRICE

New York, May 14—Increasing demands from the purchasing agents of the allies for benzol has resulted in further advances in prices of the product. Domestic inquiries for benzol and toluol have found few producers able to fill the orders, because the output of practically every available plant has been contracted for by the war agents for a long period ahead. Benzol now is being sold in bulk anywhere from \$1 to \$1.50 a gallon and is being used by the allies mostly for explosives.

GOVERNMENT BUILDING STILL

Pittsburgh, Pa., May 17—Work has been started on the United States Bureau of Mines building, which will be on concrete construction, three stories high and ready for occupancy in July. It is being erected by the government for Dr. Walter F. Rittman's experiments in extracting benzol and toluol from crude petroleum.

XENIA RUBBER BUYS SPRINGFIELD TIRE

Xenia, O., May 17—The Xenia Rubber Co. has taken over the stock, equipment and business of the Springfield Tire and Rubber Co., Springfield, O., and will move it to Xenia where a plant will be erected to house it. Machinery and equipment is valued at \$20,000 and the business is in a flourishing condition. The Springfield company sold out because it was ordered out of its present building and was unable to secure a new location.

ST. LOUIS MOTOR SHOW

St. Louis, Mo., May 15—The 1915 motor show will be held next October at Forest Park highlands, the scene of almost all previous local auto shows. The affair will be held under the auspices of the St. Louis Automobile Manufacturers' & Dealers' Association, which already has signed a contract for the highlands.

Buys Zephyr Carbureter

Detroit, Mich., May 17—The P-R Mfg. Co., which made the Zephyr carbureter for Geo. A. Breeze, has purchased rights to this instrument from Mr. Breeze and will continue its manufacture under its own name.

Trade Body Plans Salesman's Edition of Used-Car Markets

Revised, Up-to-date Vest-Pocket Volume Designed to Meet Requirements of Those Who Cannot Carry Regular Report Conveniently

CHICAGO, May 17—A salesman's edition of the Central Used Car Market Report is to be issued by the Chicago Automobile Trade Association. It will be of vest-pocket size, 5 by 2½ inches, and will cost \$5 a year. It appears in revised and up-to-date form with the regular report every 3 months. Also a credit bureau is planned for the Chicago association.

The regular report is too large to be carried by a salesman, and the salesman's edition is designed to fill this need. Because of the small size, the information is condensed; whereas, the large report carries prices for the whole United States, the salesman's edition will not carry data for any zone except that in which the salesman works.

The book will include: Appraisals in "as is" condition in the zone in which the salesman works; average United States appraisals in "as is" condition; and average United States sales for the last quarter in "as is" condition.

This would equip the salesman with knowledge of value when discussing a used car with a prospect; he would have at his command something definite and tangible to show the prospect as to the value of the car in question. Of course, the allowance might not be the same as that the salesman would care to make, but the book would give him a clearly defined idea as to about what he could expect to get out of the car after he had taken it in. The book will be issued only to subscribers to the larger report, according to the present plan.

Revenue from this plan is to be used to establish a credit bureau. This would be guided by an attorney and would furnish to members: A confidential rating on garagemen and car owners; a weekly list of mortgages and liens filed; a list of accounts collected, giving credit standings; information upon request regarding customers; a series of form letters for collecting; legal advice; court service at a low cost; and weekly information on new companies and enterprises. Co-operation in the used car report service is now being furnished by twenty-seven associations.

NATIONAL JOBBERS' ORGANIZATION

Chicago, May 17—Realizing the importance of protecting the legitimate accessory jobber from the many evils with which the business at present is confronted, about twenty jobbers from different parts of the United States met at the

Union League Club recently and formed a national organization, known as the National Association of Automobile Accessory Jobbers. The initial meeting resulted in the adoption of a constitution and by-laws and the election of officers.

The organization will endeavor to promote the interests of the legitimate accessory jobber by the proper handling of accounts, and putting the business in its proper field. The officers elected at this meeting were: President, T. M. Brooks, of the Chicago Automobile Supply Co., Chicago; vice-president, S. P. Dean, of Nichols, Dean & Gregg, St. Paul, Minn.; chairman board of directors, Chas. E. Faeth, of the Motor and Mechanics Supply Co., Kansas City, Mo., and four directors, as follows: W. L. Ferrier, of Fred Campbell & Co., St. Louis, Mo.; H. P. Andrae, of Andrae & Sons Co., Milwaukee, Wis.; A. R. Thompson, of the Automobile Supply Co., Detroit, Mich., and W. W. Low, of the Electric Appliance Co., Chicago. W. M. Webster, 139 N. Clark street, Chicago, is secretary.

CHICAGO S. A. E. SECTION POSSIBILITY

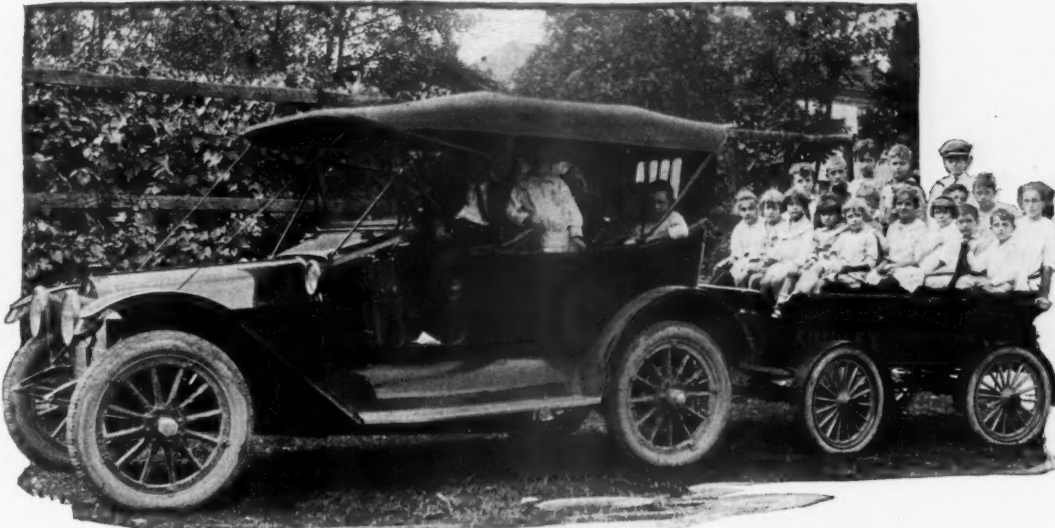
Chicago, May 17—When W. H. VanDervoort, president of the Moline Automobile Co., was elected president of the Society of Automobile Engineers last week it was expected that one of the events of his year of office would be starting a section of the S. A. E. in Chicago. For over a year the thought of establishing a section in the windy city has been under consideration. There are not so many engineers in Chicago but the surrounding territory, including such outlying cities as Kenosha, Racine, Milwaukee, Moline, Rockford, etc., bring up the number considerably, so that it is considered there is actually plenty of material for a Chicago section.

At the present moment President VanDervoort is canvassing the field with the object of seeing if a Chicago section can not be made during the present season.

While it might be difficult to have monthly meetings for a Chicago section there is no reason why meetings every two months might not be sufficient at certain seasons in the year. As Chicago is one of the great distributing points for cars it is suggested that during the winter season meetings of an educational nature might be conducted which would be of great benefit to the merchandising department of the motor industry in and around the windy city.

Trailers for Use With Passenger Cars are Developed

Two Types Recently Brought to the Field



SIMPLEX SHORT-TURN GEAR TRAILER ATTACHED TO A TOURING CAR

TRAILERS for use in carrying an added load of merchandise, or in transporting people, are coming into more general use, now that special types for attachment to ordinary touring cars have reached a high degree of perfection. In the early stages of development trailer-makers had difficulty in getting the connection right so that side-swaying would be eliminated and so that the trailer could go backwards as well as forwards, but these faults and others have been banished from practically all of the present types offered.

One of the newer designs, for use by tourists in carrying baggage, or by farmers, or the city merchant for carrying an extra load of merchandise, is the Universal Trailer, announced recently by the Universal Trailer Co., 417 South Dearborn street, Chicago. This is a 1,000-pound, two-wheel trailer with a hitch, or connection, between trailer and hauler, which is said to keep the trailer in perfect alignment at all times. The connection is such that the trailer follows in the tracks of the pulling car without pounding of the hitch. The portion attached to the hauler has at its midpoint a stout, flat piece of steel, which is clamped vertically between the two ends of the frame which converges, as shown in the illustration on this page. A ball joint allows of free movement. Prices range from \$47.50 to \$100, depending upon the type.

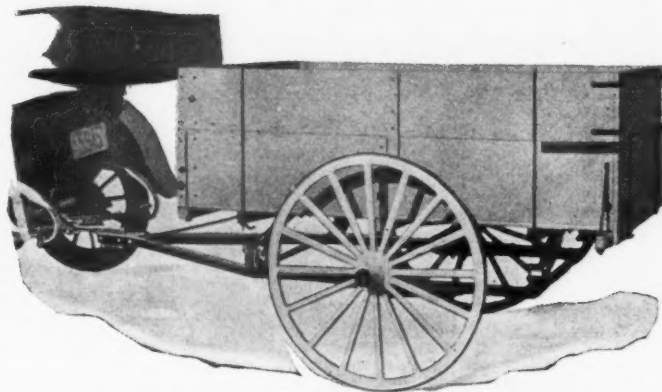
A four-wheel trailer, which has been described previously in *Motor Age*, is the Simplex Short-Turn Gear, also illustrated herewith. This is a four-wheel type, made by the Simplex Short-Turn Gear Co.,

Anderson, Ind. The coupling between puller and trailer may be detached at either end and it is stated that because of the design there is no difficulty experienced when turning corners or reversing. The trailer body is 6½ feet long and 40 inches wide.

The Motorists' Bookman

Oxy-Acetylene Welding and Cutting

A MOST valuable book for the garage man and repairman who is extending his business to embrace welding and cutting by the oxy-acetylene process, is "Oxy-Acetylene Welding and Cutting," by Calvin F. Swingle, and published by the Frederick J. Drake Co., Chicago. This book not only takes up the various methods employed in welding various metals, but instructs the operator in the



UNIVERSAL TRAILER SHOWING CROSS SPRINGS

characteristics of the gases with which he is working, together with the details of the apparatus used. Complete information is given on the fluxes to be used, handling of the torches, etc., and treatment after welding. Price is \$1, cloth, and \$1.50 in leather.

Lubrication Chart

The Norman W. Henley Publishing Co., New York, has just published a large chart of a motor car chassis, showing the various points which should be lubricated, the periods of oiling, and the kind of oil to use. The chart shows a car representative of America and is the work of Victor W. Page. At the bottom of the illustration, which is 15 by 30 inches, is

some text regarding chassis lubrication. Price is 25 cents.

Veedol Lubrication Text Book

There are few subjects about the motor car with which the everyday motorist is less familiar than that of lubrication. It is due to this general ignorance that the oft repeated warnings of car makers and others of the primal importance of proper and sufficient oiling is so generally neglected. Motorists are not to blame for their ignorance on the subject. Most of the instructions which have been given on the subject are of so technical a nature that the lay reader finds himself submerged in a maze of terms beyond his comprehension.

It has remained for a refiner of lubricating oils, Platt & Washburn Refining Co., New York, to come to the front with a textbook on motor car oiling, which, though frankly written with the popularization of its own product in view, nevertheless is a worthy addition to motor car literature. The book, which consists of some 44 pages, is devoted chiefly to a very thorough analysis and description in untechnical language of the different lubricating systems employed in car and marine motors and motorcycles. This is illustrated with very careful and enlightening diagrams printed in two colors.

Then follows an elucidation of the process of refining oils based, naturally, on the Platt & Washburn plant. Particularly interesting chapters are those on methods of testing oils and fuels by the motorist.



The Readers' Clearing House



WHAT IS THE POWER OF MY MOTOR?

S. A. E. Formula Gives Rating at 1,000 Feet Per Minute Piston Speed

HAMILTON, O.—Editor Motor Age—What is the correct method of calculating the horsepower of a four-cylinder motor the bore of which is 2½, stroke 4 inches, S. A. E. method? 2—Does the overhead valve system materially increase the horsepower over its mathematical rating?—A. C. Carney.

1—The S. A. E. horsepower formula as usually stated is:

$$\text{Horsepower equals } \frac{D^2 N}{2.5}$$

Where D is the bore of the motor in inches

and N the number of cylinders.

Thus, for a four-cylinder, 2½ by 4 motor, the horsepower equals

$$\frac{2\frac{1}{2} \times 2\frac{1}{2} \times 4}{2.5} = 11.02 \text{ horsepower.}$$

This is the horsepower of the motor at 1,000 feet per minute piston speed, or at 1,500 r.p.m.

2—This depends upon the construction of the motor. A certain overhead-valve motor may show a greater horsepower at 1,000 feet per minute piston speed than is accorded it by the S. A. E. formula; another may show less power at that piston speed. Only a power curve of the motor will show exactly how its power compares with that obtained from the formula.

ADVICE ON IMPROVING CLUTCH

Adding Few New Disks Will Stop Slipping, Says Reader

Leland, Ia.—Editor Motor Age—I notice in the April 29 issue of Motor Age that R. C. Sherman wants advice about the clutch on his 1912 Abbott 30.

I have had trouble with several of these clutches since working in shops and find that the best and cheapest way is to add from two to four extra clutch disks. It is quite a job to remove this clutch and it had better be taken to some good repair man.—C. A. Barrett.

CHEVROLET CHANGED TO SPEED CAR

Will Install New Camshaft and Change Gear Ratio—Other Alterations

Des Moines, Ia.—Editor Motor Age—I have a 1915 model Chevrolet Royal Mail roadster which I intend using for ½-mile track races. I have bored out the exhaust and intake ports and enlarged both the intake and exhaust valves. They now measure 1½ inch. I have put in some Magnalium pistons and raised the compression of the motor. The pistons and connecting rods also have been balanced.

The car is geared 3½ to 1. The best speed which can be obtained is 55 miles per hour. I am building the car to do 70 miles per hour.

1—The camshaft in the car has a 7/32-inch lift. What lift of cam would be best for racing in this motor?

2—The car which LeCain had at Sioux City had the regular motor in but was lightened up just like I have done. I would like to know whether or not he had a special camshaft in the motor. If so, what lift of cam did it have and where did he get this camshaft?

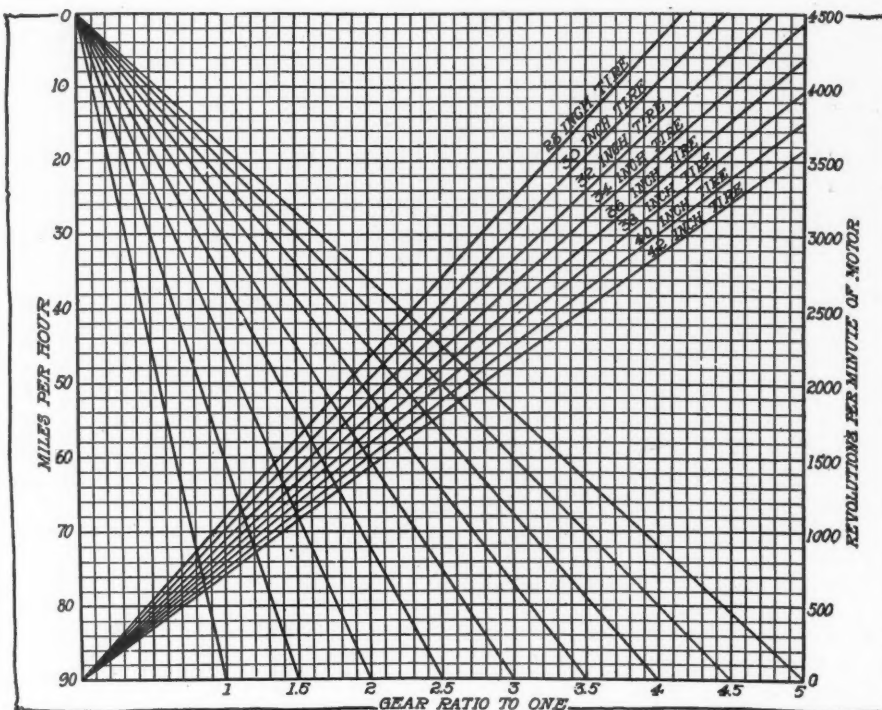


FIG. 1—CHART FOR ASCERTAINING R. P. M. OF MOTOR, KNOWING THE GEAR RATIO, CAR SPEED AND TIRE SIZE

3—What is the formula for figuring the r.p.m. of the crankshaft?

4—What speed did LeCain obtain in practice at Sioux City?—P. E. Shafer.

1—In a letter from Jack Le Cain, he states that the car he used at Sioux City was fitted with a motor larger than the regular one, the dimensions being 3¼ by 4½. The lift on Le Cain's car was ⅝ inch.

2—Le Cain used a special camshaft. The lift is given above. Any good machinist will cut a shaft for you from a print. Le Cain had his made by the Mason Motor Works, Flint, Mich.

3—The r.p.m. of the motor can be figured from the chart, shown in Fig. 1.

Given the miles per hour, gear ratio and tire sizes, find the revolutions of the crankshaft per minute: To solve this, select the miles per hour on the left-hand margin. For illustration, suppose the car is traveling at 80 miles per hour with 34-inch tires and a gear ratio of 1.5 to 1. From the figure 80, move right to the intersection of the gear ratio line designed as 1.5.

From this point move up to the diagonal of 34 inches. From this point move right to the margin where the revolutions of the crankshaft speed per minute are shown; 1,200 in this case.

4—Over 70 miles per hour. He claims his car will now show 90.

MAKES SUGGESTION TO READER

Gives Hint on Changing from High to a Lower Gear

Keams Canon, Ariz.—Editor Motor Age—Howard V. Allen, Springport, Mich., states in the April 15 issue of Motor Age that he has trouble in changing from a high to a lower gear. I wish to suggest that he try opening the throttle slightly in making this change, and I think he will not have this trouble of rasping the gears. In going from a low to a higher gear allow the throttle to close, and slow down the motor, but in changing from a higher to a lower gear, always open the throttle a little to speed up motor.—F. H. Hathorn.

Questions Answered and Communications Received.

A. C. Carney.....Hamilton, O.
C. A. Barrett.....Leland, Ia.
P. E. Shafer.....Des Moines, Ia.
F. H. Hathorn.....Keams Canon, Ariz.
E. White.....Burlington, Ont.
Leslie Hedrick.....Loraine, Ill.
Billy Howard.....Milwaukee, Wis.
W. W. Meirs.....Princeton, N. J.
W. W. Gower.....South Bend, Ind.
Modern Garage.....Yorktown, Texas
No communications not signed with the reader's full name and address will be answered.

Which Car Is Easy to Operate?

Burlington, Ont.—Editor Motor Age—It is stated that the small-bore, long-stroke motor, while having the advantages of greater economy in gasoline and greater leverage on the crankshaft, has the disadvantage of requiring more gearshifting to keep up the speed of the engine no matter what the car speed and also more careful manipulation of the ignition. Is the square motor still the easy one to operate?

2—Will the Owen magnetic drive do away with gearshifting?

3—What make of machine is easiest to operate?—E. White.

1—The average high-speed motor is not handled as easily as the low-speed in this

respect and gearshifting may be done more frequently, depending upon the gear ratio used in the rear axle.

2—There are no gears to shift in the Owen car.

3—The personal element enters into this, as one make of machine may be easy to operate for one person and difficult for another. The size of the man and his experience at the wheel must be taken into consideration.

CAR CAN CLIMB 60 PER CENT GRADE Maximum Gradient Is 66, at Which Traction Is Overcome by Gravity

Loraine, Ill.—Editor Motor Age—I recently read in an old issue of Motor Age that a 20 per cent grade was a good climb, a 40 per cent grade was an exceptional climb for any car, while no car could climb a 60 per cent grade because of the force of gravitation. Am I right concerning the impossibility of climbing a 60 per cent grade?

2—Kindly give the names of some of the leading motor car publications in Germany, France and England.

3—Kindly show charts which give the horsepower of four-cylinder motors.

4—In the operation of a heavy car weighing 4,000 or 5,000 pounds, what is the largest item of upkeep if the motor and chassis are of first class construction?

5—Has the air-cooled motor used in motor cars proved a complete success?—Leslie Hedrick.

1—A gradient of 66 per cent, which is equal to an angle of about 30 degrees, is considered the maximum grade a car will overcome. On a grade of this kind gravity overcomes traction.

2—In England, the leading publications are the Autocar and Motor, both in London. In France, Omnia is a leading paper, and in Germany, Automobil Zeitung.

3—A table giving these horsepowers is shown on this page.

4—Tires are the largest item usually, with fuel consumption next.

5—Yes.

GETS CRANKY TRYING TO CRANK Hard to Turn the Motor Over—Caused by Tight Pistons

Milwaukee, Wis.—Editor Motor Age—I have a Velle 1912 car and would like to know why the motor is so hard to turn over. The bearings are loosened up and the pet cocks opened, but I am still unable to turn it over. An awful strain has to be used to turn it.—Billy Howard.

1—In all probability the pistons are tight, although the trouble may be caused by a drag on the flywheel. What has been done to the motor recently? If overhauled, then the pistons may have been fitted improperly. Have you under-lubricated it? More data concerning the motor will help Motor Age give a better answer.

ADVANTAGES OF THE SPRING TYPES Individual Installation Must Be Considered—Some Data

Princeton, N. J.—Editor Motor Age—Is there any way of determining what gear ratio on final drive would prove most satisfactory?

2—Are quarter-elliptic springs in front best for easy riding for very light cars? Are semi-elliptic springs on the rear the best?

3—Who manufactures the axles used in the Argo car?

4—For high-speed engines, is a magneto preferred by most designers to a high-tension battery system?

5—Does not the placing of the gearset in unit with the rear axle tend to increase the rough riding in a car, due to increase in unsprung weight?—W. W. Meirs.

1—The gear ratio is determined after the motor characteristics are ascertained.

Suppose, for example, that the maximum power of the motor is developed at 1,500 r.p.m. and it is desired to give the car a maximum speed of 50 miles per hour. A reduction is used which will cause the car to show 50 miles per hour when the motor is turning over at 1,500. The most satisfactory ratio depends upon your motor and how you wish the car to perform.

2—The advantages and disadvantages of the various types of springs depend upon weight distribution and the design of the car. One form of semi-elliptic spring may be superior to a certain form of elliptic or three-quarter elliptic, and vice versa. The spring problem is solved best if examples are given. That is, take three cars of

Horsepower Table

Bore in Inches.	—Number of Cylinders—		
	Four	Six	Eight
2½	10.00	15.00	20.00
2¾	11.23	16.85	22.46
2¾	12.08	18.13	24.16
2¾	13.37	20.00	26.74
3	14.40	21.60	28.80
3¼	15.64	23.50	31.28
3¼	16.92	25.39	33.84
3¾	18.21	27.30	36.42
3¾	19.61	29.45	39.22
3¾	21.08	31.57	42.16
3¾	22.50	33.75	45.00
3¾	24.22	36.32	48.44
4	25.60	38.40	51.20
4¼	27.20	40.80	54.40
4¼	29.00	43.50	58.00
4¾	30.65	46.00	61.30
4¾	32.40	48.60	64.80
4¾	34.28	51.41	69.56
4¾	36.15	54.20	72.30
4¾	38.25	57.21	76.50
5	40.00	60.00	80.00
5¼	42.20	63.20	84.40
5¼	44.20	66.40	88.40
5¼	46.34	69.50	92.68
5½	48.48	72.72	96.96
5¾	50.80	76.10	101.60
5¾	53.00	79.50	106.00
5¾	55.28	83.88	110.56
6	57.70	86.64	115.40

given weight distribution and design and then the matter may be threshed out. However, disregarding design, etc., many arguments are set forth usually in upholding or degrading certain spring types.

Spring suspension has been a great problem to motor car engineers, because the car must of necessity travel over rough roads and at slow and high speeds. If the object of the springs is understood clearly, the relative advantages and disadvantages of the various forms will be understood more readily. Springs must support certain members of the car, they must absorb the shock transmitted to the road wheels. Springs to be efficient must prevent the body of the car from side swaying. In other words, the springs of a motor car must be strong to support a load

and resilient to make the car riding easy.

The semi-elliptic spring is used in the majority of vehicles in the front and, in many, also in the rear. This type reduces side sway greatly and yet is not hindered in its movement. This type is adapted to carry great weight without the tendency to permit side sway. If semi-elliptic springs are made to be exceptionally resilient they must be made long. This adds to the cost and at the same time increases the tendency to side sway. One great objection to the semi-elliptic spring is, that if made sturdy to support great weight, much of the power of the motor is lost through the springs. It is quite evident that when the car strikes an object on the road the power to overcome the obstacle is absorbed by the spring. Stiff semi-elliptic springs are not to be desired when shock-absorbing qualities are factors, for when a car with such springs strikes an obstruction on the road the tendency is for the wheels and axles, and perhaps a portion of the car, to leave the ground for an instant.

In the elliptic spring the tendency to side sway is unusually great. This type of spring if made to be as strong as the semi-elliptic will perhaps lose much of its resiliency. Average design shows that the elliptic spring is far more resilient than the semi-elliptic and better able to absorb road shock.

In the three-quarter elliptic type the problem is more a manufacturing problem. If this form is used the overhang is lessened, which calls for a longer wheelbase.

3—These are made by the Argo company.

4—Not always. There are many high-speed motors using battery ignition only.

5—This depends upon the design of rear axle. Read the discussion on this subject in the April 8 issue of Motor Age in this department.

Sunbeam Twelve Never Raced Here

South Bend, Ind.—Editor Motor Age—Has the Sunbeam twelve-cylinder car ever been in competition in the United States at Indianapolis or any other track?

2—What has become of the Delage driven by Guyot in the 1914 Indianapolis race?—W. W. Gower.

1—No.

2—Motor Age does not know where this car is at the present time. Guyot shipped it back to France after the 500-mile race at Indianapolis.

Platinum-Iridium and Meteor Wire

Yorktown, Texas—Editor Motor Age—Please state the disadvantage of Meteor wire contact points in a magneto as compared with platinum points.—Modern Garage.

Platinum usually is not used alone for magneto interrupters, there being a percentage of iridium added to give the points greater resistance to hammer action which they must withstand when in use. Platinum-iridium is better than meteor wire for this purpose. Meteor metal is a steel alloy with great resistance to heat and gives good results.



Routes and Touring Information



WILLIAM DE VENY and his family of Portland, Ore., are making a journey from that city to New York in a 60-horsepower car, that more nearly resembles a hotel than a car. Dr. DeVeny wanted something original and novel and drew the plans for a "family hotel" and adopted the plans to fit the size and capacity of a 60-horsepower Thomas chassis. The weight of the outfit is 4,000 pounds and capable of carrying between 1,500 and 2,000 pounds, and also will carry four persons and their baggage.

The body of the hotel is 7 feet wide, 10 feet long and 6 feet high. At the back end, where the main entrance is placed, there is a drop platform, 2 by 3 feet, the steps being 18 inches above the ground. The door is 2 by 6 feet. They will serve for a platform for Dr. DeVeny's illustrated lectures which he plans to deliver at the towns he will pass on his way across the country.

There is a side entrance at the front 2 by 6 feet, which admits the driver to the seat in front. The seat of the driver is detachable, to be moved when the car is not in motion and the space is wanted for meals or for sleeping purposes, the inventor having made use of every inch of space inside to the best advantage.

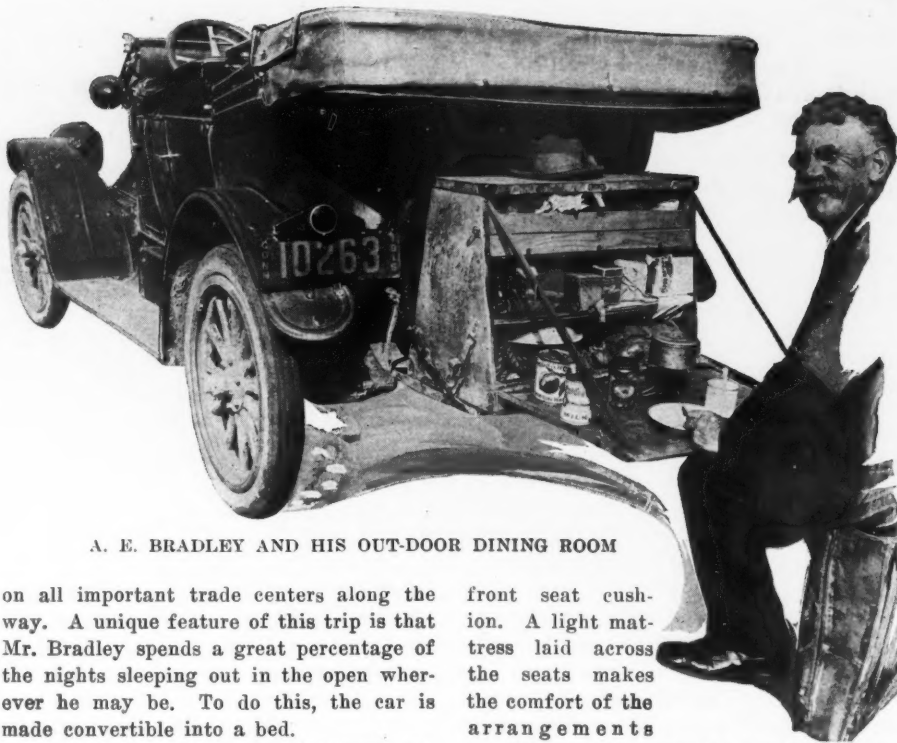
There is a cupboard with four drawers, compact and with no waste space, and yet ample for the purpose, 12 by 18 inches when folded out of the way. The stove is a gasoline burner, near the windshield, taking up little space. In arranging the beds the same economy of space was followed. There are four beds, two on each side, one above the other and when not in use are folded along the sides and covered with portieres. When in use the portieres swing down in the middle, separating the four beds and making two complete bedrooms.

The beds are provided with 1-inch felt mattresses, each 2½ by 6 feet and protected from dust. The table is 2½ by 3 feet, and when not in use is folded up, taking a space 5 by 8 inches by 3 feet long. When in use it accommodates four persons. Chairs are to be folded away.

Ample ventilation is provided by means of wire screens which admit pure air and keep out troublesome insects. A fly tent, 10 by 12 feet, is carried, which will be spread from the rear end of the car when Dr. DeVeny is lecturing.

HAS TOURING SLEEPING CAR

A. E. Bradley, New Haven, Conn., is running a Franklin car from coast to coast, through the southern route, and back through the central route, making this trip in the interest of his firm and calling



A. E. BRADLEY AND HIS OUT-DOOR DINING ROOM

on all important trade centers along the way. A unique feature of this trip is that Mr. Bradley spends a great percentage of the nights sleeping out in the open wherever he may be. To do this, the car is made convertible into a bed.

The back of the front seat is hinged and turns towards the rear, filling up the space between the rear seat cushion and the

front seat cushion. A light mattress laid across the seats makes the comfort of the arrangements

complete. On the rear, Mr. Bradley carries cooking utensils, touring trunk, blankets and provisions.

Answers to Inquiries for Route Information

Toll Charges

Greenville, O.—Editor Motor Age—We intend to tour from Greenville to Washington, D. C. via Pittsburgh, Harrisburg and Gettysburg, and returning over the National Old Trails through Hagerstown and Cumberland. I understand that toll is charged in some localities on this route. Kindly advise me where such charges are made and the amount of the tolls.—A. H. Welmer.

The only toll charges on this trip is on the stretch between Harrisburg and Baltimore.

The first toll is in crossing the Susquehanna river on leaving Harrisburg, 6 cents for car and 2 cents for passengers. After leaving Littlestown, Pa., en route from Gettysburg to Baltimore, there is a toll of 8 cents, another toll of 8 cents at Union Mills, Md., and 10 cents toll crossing the railroad into Westminster, Md. After leaving Westminster, two tolls are required, each from 10 to 15 cents; another toll of from 10 to 15 cents between Finksburg and Reisterstown, and from 10 to 21 cents beyond Reisterstown. St. Louis, Mo.—Los Angeles, Cal.

Kennett, Mo.—Editor Motor Age—Kindly give me information as to the condition of the roads from St. Louis, Mo., to Los Angeles, by way of Kansas City, Mo.; Dodge City, Kan.; Guyman, Okla.; Las Vegas and Phoenix. I desire to take this trip about the middle of June or first of July.—W. B. Anthony.

Motor Age hardly counsels a trip of this kind during July and August, as the states of New Mexico and Arizona are so uncomfortably hot at that season as to materially

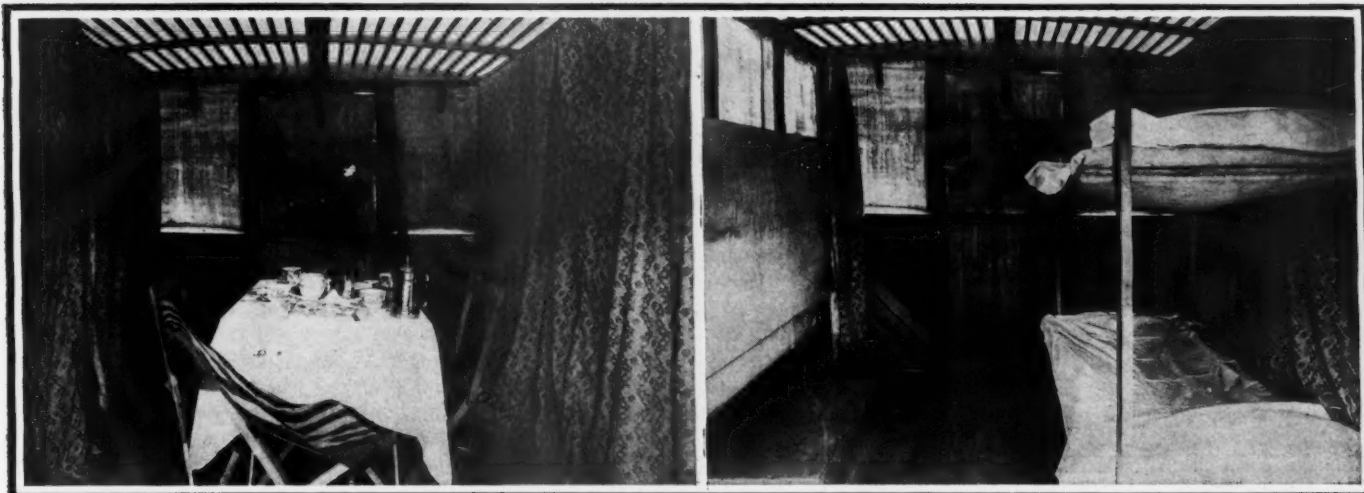
detract from what in all other respects would be a most pleasant trip. If you must go through the southwest, it would be somewhat better to follow the more northern route by way of Flagstaff. This, while somewhat longer than through Phoenix, is over generally higher country and is not likely to prove quite so hot as the Phoenix route.

By going this way, you will also have an opportunity of visiting the famous Grand Canyon of the Colorado, a side trip of some 85 miles from Flagstaff. However, it seems the best trip at that time of the year would be through Colorado and Nevada, although this would be considerably longer. The Rockies of Colorado are at their best during July and August, and the scenery is so wonderful as well to compensate you for the added mileage.

Woodstock, Ill.—Mobile, Fla.

Woodstock, Ill.—Editor Motor Age—I am about to take a motor trip to Mobile, Ala., and also visit Florida as far south as Palm Beach. Kindly give me the shortest and best route direct to Mobile, then on to Palm Beach.—E. M. Ingersoll.

From Woodstock, drive down through Ridgefield, Crystal Lake and Algonquin to Elgin and continue through St. Charles and Geneva to Aurora, and so down to Joliet. From Joliet turn east on the Lincoln highway through Dyer to Valparaiso, and thence via Bass Lake and Winamac to Logansport and so down to Indianapolis. From Indianapolis drive down to Louisville and thence via the Mammoth cave to Nashville, Tenn. From Nashville drive down to Columbia and thence through Pulaski and Athens to Decatur, and so to Birmingham and Montgomery.



INTERIOR OF DE VENY'S MOTOR HOTEL. AT THE LEFT IT IS A DRAWING ROOM; AT RIGHT, TRANSFORMATION INTO BEDROOM

From Montgomery the trip to Mobile will take you through Selma, Thomasville and Jackson. From Mobile start out over the ferry to Daphne, and continue through Pensacola, Milton, De Funiak Springs and Marianna to Tallahassee, and thence, by way of Madison, Live Oak and Lake City to Jacksonville. From Jacksonville follow the so-called East Coast boulevard through Ormond, Rockledge and Fort Pierce to Palm Beach.

As to motoring conditions, you will have no trouble until you get south of Nashville. Through Alabama and across Florida, however, the roads leave much to be desired, and there are many very poor stretches. The East Coast boulevard down the Florida coast has received a great deal of attention of late, and bids fair to be in pretty good condition practically all the way. You might stop at the Board of Trade in Jacksonville for further information concerning the last leg of your trip. This progressive organization keeps itself well informed on motoring conditions throughout Florida and the adjacent territory. Recommend securing volumes 3 and 4 of the Blue Book for complete running directions.

LeRoy, Minn.—Harlan, Ia.

LeRoy, Minn.—Editor Motor Age—Kindly outline the best route from Le Roy, Minn. to Harlan, Ia.—C. F. Hynds.

Drive to Grand Meadow, and through Austin to Albert Lea. Turn South and drive 41 miles through Glenville, Northwood, Manly and Freeman to Mason City. Continue South 98 miles through Rockwell, Hampton, Iowa Falls, Hubbard, Story City to Ames, then turn West and drive 77 miles on the Lincoln highway through Jordan, Boone, Ogden, Grand Junction, Jefferson and Scranton to

Carroll. From Carroll it is but a short distance to destination and make inquiry at Carroll for road directions.

Des Moines, Ia.—Duluth, Minn.

St. Charles, Ia.—Editor Motor Age—Kindly give me a routing for a trip about July 1 from Des Moines, Ia., to Duluth, Minn., via St. Paul. What is the condition of the roads between St. Paul and Duluth? Is it possible to drive by motor car from Duluth to Deer River, Minn.?—J. L. Stayton.

Follow the Inter-state trail from Des Moines, going through Cambridge, Nevada, Iowa Falls, Hampton, Mason City, Northwood, Albert Lea, Owatonna, Medford, Faribault, Northfield, Farmington, St. Paul. The first 170 miles are over good dirt, kept in good condition by dragging; last 100 miles fair-to-good gravel.

Motor Age believes the best trip to be as follows: St. Paul, White Bear, Forest Lake, Wyoming, North Branch, Rush City, Pine City, Hinckley, Sandstone, Sturgeon Lake, Moose Lake, Carlton, West Duluth and Duluth. This trip is quite possible during dry weather, but after rains it is practically impassable. The authorities are working hard to get the road in proper shape, and it is getting better constantly. For 30 miles out of St. Paul there is a fine macadam and gravel road, but between Hinckley and Sturgeon Lake there is a sandy stretch which is in very bad shape. This route is marked as the Black trail, and the distance between St. Paul and Duluth is approximately 160 miles.

It is no doubt possible to drive from Duluth to Deer River during the summer months, although we cannot furnish you with the running directions, nor do we know what the road conditions are. We believe, how-

ever, that the route runs northwest from St. Paul, following the general line of the Great Northern through Grand Rapids. Deer River lies about half-way between the latter town and Lake Winnibigoshish. Volume 5 of the Blue Book gives complete running directions from Des Moines to St. Paul.

Monticello, Ark.—Ryan, Okla.

Monticello, Ark.—Editor Motor Age—I wish to go from southeastern Arkansas to Ryan, Okla. Kindly give me a routing, also information on the highways in New Mexico, Arizona and Colorado.—J. W. Campbell.

From Monticello, it is possible to go west to Arkadelphia through Barkada, Warren, Orlando, New Edinburgh, Chambersville, Bear-don, Holly Springs, Pine Grove, Fairview and Dalark; west 92 miles to Texarkana through Gurdon, Boughton, Prescott, Emmet, Hope and Fulton. Over natural roads go to Dallas, Tex., 218 miles, via New Boston, Annona, Detroit, Blossom, Brookston, Windom, Whitewright, Vandalla, Anna, McKinney, and Richardson. A run of 33 miles over a good gravel road through Grand Prairie and Arlington brings you into Fort Worth.

Drive northwest to Fruitland, 68 miles, on the Colorado to Gulf highway through Saginaw, Newark, Decatur, and Alvord. At Fruitland, turn north and route through Stoneburg, Ringgold, Terral to Ryan.

From Monticello, instead of going to Arkadelphia first, you might route to Pine Bluff and thence to Arkadelphia 90 miles, through Benton, Lonesdale, Hot Springs, and Bismarck. Balance of route as outlined above.

Decatur, Ill.—Rogers, Mich.

Kindly publish the best route from Decatur, Ill., to Rogers, Presque Isle county, Mich.—L. C. Rehling.

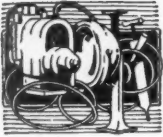
Drive to Champaign, Ill., 57 miles, through Maroa and Monticello; then to LaFayette, 92 miles of dirt, gravel and macadam road, through Danville, Covington, Stone Bluff and Attica. One hundred and twelve miles of gravel and macadam road takes one through Americus, Delphi, Deer Creek, New Waverly, Peru, Wabash and Huntington to Fort Wayne.

A direct route to Detroit, 165 miles, is through Maysville, Farmer, Bryan, Archbold, Wauseon, Lyons, Adrian, Birdsell and Tecumseh.

Bay City, 118 miles, is the next objective point, and is reached through Farmington, Highland, Fenton, Flint, Birch Run, Bridgeport, and Saginaw. This is a good macadam and gravel road. Going next to Alpena, 152 miles, drive through Pinconning, Standish, Maple Ridge, Whittemore, Tawas City, Oscoda, Lincoln and Spruce. You will find this an excellent road. A gravel road through Long Rapids and Posen brings you into Rogers, 44 miles.



HOW A CONNECTICUT TOURIST MAKES A BED OUT OF A FRANKLIN



The Accessory Corner

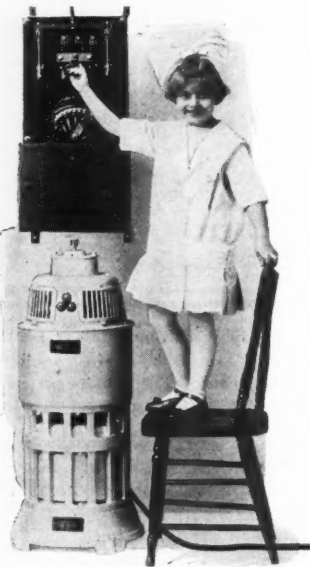


FIG. 1—HERTNER CHARGING OUTFIT

This is a vertical machine in the form of a motor-generator, operated by a simple switch board. The cable at the bottom is attached to the batteries to be charged.

Nurinkle Automatic Tire Gauge

An automatic tire pressure gauge and pressure regulator is announced by the Nurinkle Co., Indianapolis, Ind. With this gauge in the air line, adjusted so as to give a certain pressure, the tire will be pumped to that pressure and all excess air expelled through a check valve. At the same time that it controls the air pressure in the tire, it registers the pressure on a graduated cylinder, which is part of the device, as shown in Fig. 2. The small knurled nut at the top of the Nurinkle may be adjusted so that the instrument will exhaust the air as soon as the desired pressure is reached. The cylinder is graduated every 20 pounds up to 120. Price is \$1.25.

Hertner Charging Outfit

A vertical motor-generator set with switch board, for use in charging electric vehicle batteries, from an alternating-current source, now is being marketed by the Hertner Electric & Mfg. Co., Cleveland, O.

Being a motor generator, it does not stop operating should the line

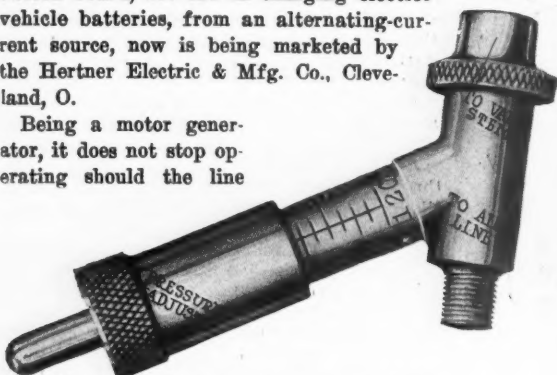


FIG. 2—NURINKLE TIRE GAUGE

This device may be adjusted so that it will allow the tire to be pumped to a predetermined pressure. It also registers the pressure in the tire.

voltage drop or cut off for an interval. In stead of this, the outfit continues to run, the generator acting as a motor with a slight draught of current from the battery until the line voltage again comes on when the machine resumes its work.

The Hertner is shown in Fig. 1 and it is clear that it does not take up as much floor space as the horizontal type. The alternating current line is attached to the board, where it is controlled by a simple switch. The direct current line is shown at the bottom of the Hertner. A feature of the machine is the use of a cooling fan mounted in the middle, and it is said that the power to create the air draught is more than compensated for in results obtained.

To produce a machine that will be as well balanced as possible, run smoothly and be readily dismantled, the motor and generator shafts are separate units and are connected by a coupling. A ball bearing is mounted immediately below this coupling

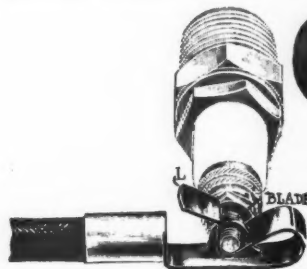


FIG. 3—TWO NEW FITMENTS

Above, Fahnstock spark plug connector and to the right, the Commercial lock which secures the shifter lever

supporting both shafts midway between the top and bottom of the machine.

Commercial Lock

A theft-preventing device, which locks the gear-shifter lever in neutral position, is being marketed by the Commercial Mfg. Co., 508 Commercial building, Cleveland, O. This device fits thirty-seven different makes of car, and consists of a casing which is attached to the shifter quadrant, this casing housing the shifter lever. The lever is prevented from being removed from the casing by a Yale lock, as shown in Fig. 3. The commercial lock may be left in position on the car when not desired for use, or it may be removed quickly and placed in a door pocket or other convenient place. Price is \$2. A special Ford lock secures the speed-operating pedal in neu-

tral position so that it cannot be pushed into either speed position.

Fahnstock Plug Connector

A simple, easily-operated spark-plug connector is that made by the Fahnstock Electric Co., 129 Patchen avenue, Brooklyn, N. Y., and sold for 7 cents. As shown in Fig. 3, the Fahnstock employs a drilled blade, which fits into a slit in the flexible portion L. The hole in the blade is for the insertion of the threaded portion of the spark plug. This is done when the spring L is depressed and as soon as it is released, it grips the electrode firmly.

Erickson Spring Leaf Lubricator

P. E. Erickson & Son, Inc., Port Chester, New York, announce a combination spring leaf spreader and lubricator which sells for \$1. This tool, shown in Fig. 4,

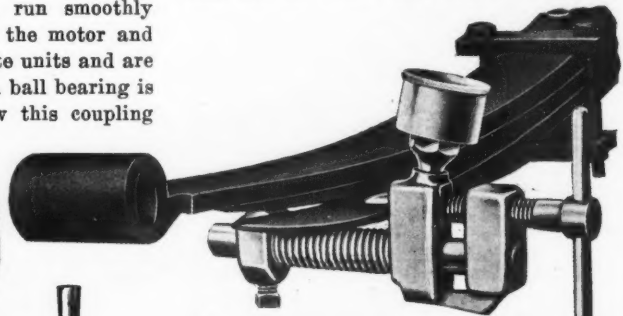


FIG. 4—ERICKSON SPRING LEAF OILER

A combination leaf spreader and lubricator. After the leaves have been spread the grease cup is turned and the lubricant is forced through a hollow wedge to the leaves.

has attached to it a grease cup and as soon as the spring leaves are spread, by the turning of a handle, the cup is turned and grease injected upon the leaf surfaces.

The spreading is accomplished by a wedge action and the upper wedge is hollow, so as to allow of the grease being forced to the spring leaves.

Permatex Gasket Cement

A gasket cement which may be used on paper, canvas, asbestos, rubber or metal is announced by Constant A. Benoit, Sheepshead Bay, N. Y. This cement when placed upon a gasket is said to make the joint proof against the leakage of a gas, oil or water and helps to hold the gasket more firmly in position. Permatex is marketed in 1/2-pint, pint and quart cans.

The maker of this also manufactures a motor enamel which is said to be unaffected by the heat of the engine and will not peel off or crack. It is made in eight colors.

Superior Fenders for Fords

A rear fender to be used on Ford commercial cars is being manufactured by the Superior Lamp Mfg. Co., 136 West 52nd street, New York. These fenders are made up in pairs, with irons complete, ready to

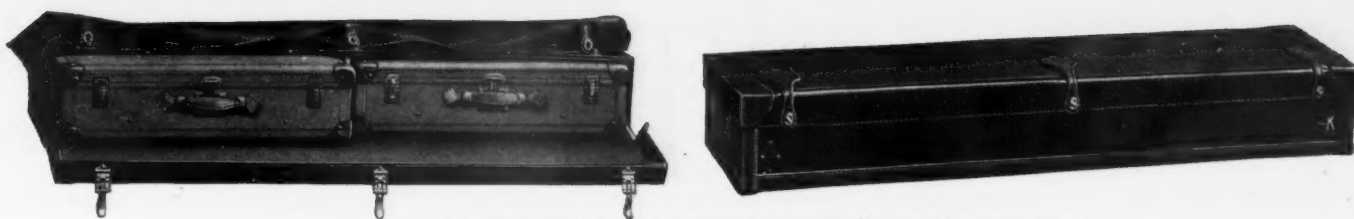


FIG. 5—A NEW TYPE OF RUNNING BOARD TRUNK WHICH IS MADE TO FIT ALL CARS

This trunk is one of the many types brought out by the Kamlee company for the 1916 season. It is made as wide as the running board and low enough so as not to interfere with door operation

attach to any kind of delivery body that may be put on the Ford chassis. They are curved as the 1915 rear Ford fenders, and are made of heavy steel metal. These fenders are finished in a triple coat of black, baked enamel, and are furnished with an inside mud-splash apron. They are packed in crates for shipment and list at \$9.90 per pair.

A new system of attaching the regular type of oil lamps to the Ford cars also

has been brought out by this concern, in the form of malleable iron brackets, consisting of two side lamp brackets and one tail-lamp bracket. These brackets are designed to fit the projecting flange from the windshield and are fastened by means of a bolt and nut. The side lamp brackets are made up in rights and lefts and take the ordinary flat lamp bracket holder.

The Superior brackets list at \$1.50 per set of three pieces.

suitable place for these hats. In order to make hat-carry an easy matter, the Warren Leather Goods Co., Worcester, Mass., has just brought out a new type of hat box, shown in Fig. 6, which is light in weight. Black enamel duck is used as



FIG. 7—TWO FOLDING FITMENTS

Above, the Duplex folding wash basin, which is made of heavy brown canvas; below is a folding trunk made of black leatherette

Interesting Fitments for the Motor Tourist

Duplex Wash Basin

A MOST valuable accessory for the tourist who takes long journeys in his car, who remains away from home at least 1 day, is the brown canvas, folding wash basin, made by the Planet Company, Westfield, Mass., and sold at \$1. This basin, shown in Fig. 7, can be carried in a comparatively small space. Two sizes are made, the one listing at \$1 being 10 inches diameter and 5½ inches deep, and when folded occupies a space 10 by 6 by 1½ inch. A larger size, 12 inches in diameter and 7½ inches deep, lists at \$1.50.

Another touring accessory which this concern markets is a round, folding trunk, shown in Fig. 7. This is made of black

leatherette, is guaranteed waterproof by the maker, and is designed to fit inside an extra tire or strapped to another part of the car. The cover has two buckles and is hinged in the middle, so that access may be had from either side. Price is \$10.

Warren Touring Hat Box

Men who have done much touring and have attempted to carry headgear for all occasions know how difficult it is to find a

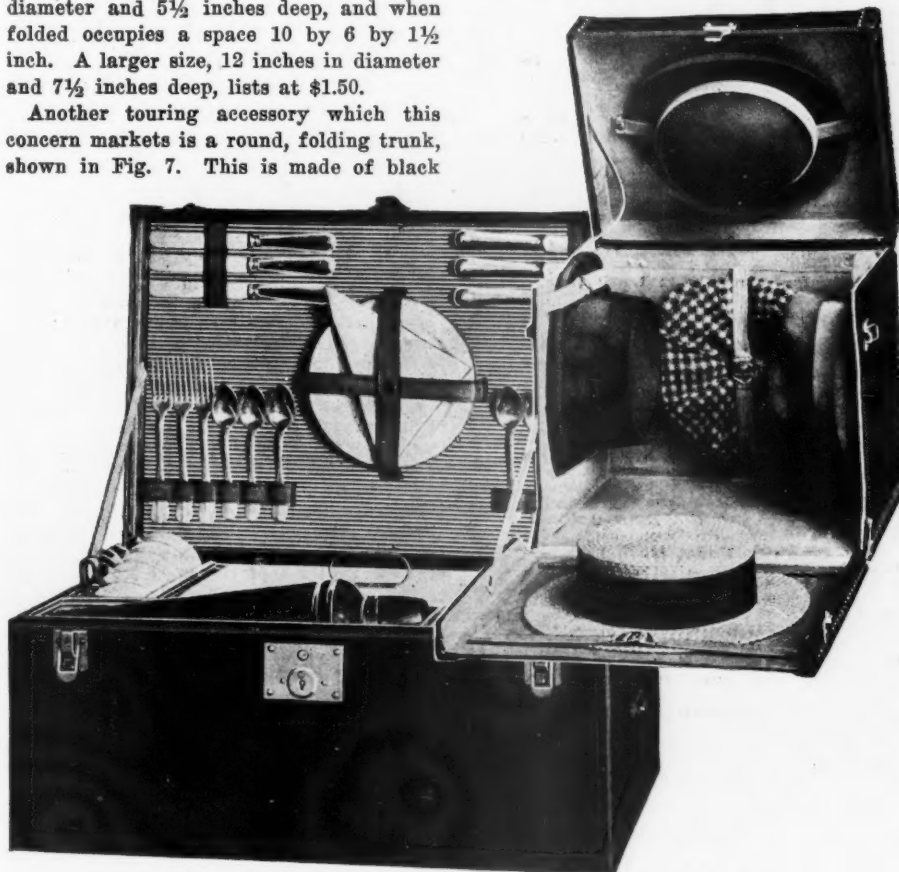


FIG. 6—TWO NEW ACCESSORIES FOR THE MOTOR WANDERER

At the bottom is the Winship six-person luncheon outfit, which contains all necessary kitchen utensils and space for food and vacuum bottles. At the top is a hat box which many male motorists will appreciate when a variety of headgear is needed on a tour

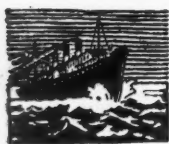
a covering and blue sateen for the lining. The edges all are properly bound and the hardware nicked. It is 17 inches long by 13 wide by 15 deep, and sells for \$15.

Kamlee Running-Board Trunk

The Kamlee Company, Milwaukee, Wis., announce a new type of running-board trunk, which is just wide enough not to protrude over the edge of the board and low enough so as not to interfere with door operation. The trunk is just large enough to accommodate the suit cases, shown in Fig. 5, which are part of the equipment. The lid of the trunk is hinged at the edge, so that it may be dropped down over the edge of the running board. Its length is 49 inches, height 9 and width 12 inches. Price is \$45.

Winship Luncheon Kit

A six-person luncheon outfit is being marketed by W. W. Winship, 71 Summer street, Boston, Mass. This box is 22 by 12½ by 10 inches high and contains utensils for six persons, also preserve jars, salt and pepper shakers and space for a Thermos or similar bottle. Finished in black enamel duck the price is \$20.



From the Four Winds



QUEBEC Motors May Total 10,000—Statistics of motor car registrations in the province of Quebec for the first 3 months of this year totaled 7,413. It is expected the 10,000 mark will be reached by the end of the year.

May Transfer Tags in Ohio—Without a dissenting vote, the Ohio senate has passed the bill providing for the transfer of motor car tags from one car to another by the same owner, by making a payment of \$1 for changing the registration.

Plans Sociability Run—The Washington section of the Electric Vehicle Association has planned the second annual sociability run of the association to be held the week of May 24. Prizes will be awarded the winners in the sealed time contest.

Washington Registrations 4,240—Motor registrations in Washington for the first 4 months of this year totaled 4,240. The April registrations were 1,282.

Bonds for California Roads—Three million dollars have been added to the proposed bond issue for state highways in order to complete a number of arteries in southern California. The legislature a short time ago passed a \$12,000,000 measure to complete the highways for which \$18,000,000 was voted 4 years ago.

Motor Truck Exports Increase—Statistics given out by the department of commerce show that during the first 8 months of the war, motor truck exports were \$13,214,202 in excess of those for the corresponding period of the year previous. From July, 1913, to February, 1914, truck exports were valued at \$797,722, while from July, 1914, to February, 1915, the figures were \$14,011,924.

Registration Based on Carrying Capacity—The Connecticut legislature has enacted a bill which requires the registration of motor vehicles be based on the actual carrying capacity. For a vehicle that will carry ½ ton a charge of \$11 a year is to be charged; 1 ton, \$15; from 1½ to 3 tons, \$5 additional for each ½ ton; 3½ tons, \$45; 4, 4½ and 5 tons, \$10 additional for each ½ ton; 5½ tons, \$87.50; 6, 6½ and 7 tons, \$12.50 additional for each ½ ton; 7½ tons, \$150; 8, 9 and 10 tons, \$25 additional for each ton; above 10 tons, \$50 additional for each ton.

Tractor-Trailer Regulations—A rational code for the regulation of motor trucks and tractors, governing size, weight and speed, has been presented to the Chicago city council. It permits tractors and trailers up to 40 feet in length, and 8 feet, 6 inches, in width, to move at a rate of 9 miles per hour. Tractor-trailer trains of greater length are to be permitted to operate on rails, provided permission to lay them has been obtained, or the street car companies have granted permission to use their tracks. Trains up to 100 feet in length are allowed on special permits during night hours.

Vehicles Run by Railroad Engineers—A motor line, using steam motor cars driven by railroad engineers, recently began operations between Rutland and Stockbridge, Vt. It forms a connecting link between the White River road and the Rutland. E. S. French, vice-president of the former railroad, is at the head of the bus line. A saving of \$2.05 in fare and 2 hours time between Rutland and Randolph is effected by using the motor road. It also provides an easy way to reach Montpelier, the capital, by changing at Bethel. Buses carrying fifteen are used and one round-trip a day is made at present.

The service will be increased later. It is not a jitney line, for the fare is \$1.50. Trucks will be used to carry freight and baggage if conditions warrant it.

Ford Builds Big Sign—What is said to be the world's largest electric sign is being built by the Ford Motor Co. of Canada, Ltd., at Ford, Ont. The sign, which will be 450 feet long, will carry the company's corporate name in letters 15 feet high.

California Motor Registrations Increase—Motor car registrations for April totaled 7,686, according to figures issued by the California vehicle department. The total, while largely for new cars, contains some old ones. Heading the list is the Ford with 2,669 cars. Next comes the Studebaker with 601; Buick, 533; Overland, 523; Maxwell, 381; Dodge, 237; Cadillac, 201; Reo, 196; Mitchell, 125; Hupmobile, 118; Chalmers, 106; Jeffery, 98; Hudson, 80; Metz, 77; Regal, 75; Oakland, 70; Kisselkar, 55; Oldsmobile, 54; Franklin, 53; Locomobile, 34; Packard, 27; Pierce Arrow, 26. The gross revenue from the motor, motorcycle and chauffeur licenses this year to date is \$1,663,859.25, or \$325,074 in excess of total 1914 revenues, but this increase is accounted for largely through col-

lecting under the McClure displacement method.

Pastor Sells Motor Cars—Rev. George C. Carl, pastor of the First Brethren Church, at Portland, Ore., in addition to his duties as pastor is also on the sales staff of the Ford Motor Co., in that city. During the 4 months ending May 1 he sold 120 cars.

Wins Essay Contest—In the recent essay contest conducted by the Studebaker Corp. on "How to Sell a Studebaker Car," Paul G. Hoffman, of the Los Angeles branch, has been awarded first prize of \$100. In addition, Mr. Hoffman was given a silver loving cup by the Los Angeles branch to commemorate his success as its salesman.

Will Confer on Traffic Regulations—The conference committee named to represent the horse and motor truck users in New York will report May 26 on its findings in an investigation of the proposed restrictive measures of the municipal government regarding the weight, size and speed of motor trucks and horse-drawn wagons on the streets.

British Tire Warranty 10,000 Miles—British tire manufacturers have agreed on a standard solid tire guarantee of 10,000 miles within a period of 1 year, as a result of the investigations of the solid tire committee. The guarantee has been adopted by over twenty firms, representing the more important makers of tires in England. The guarantee is given subject to certain usages, and consumers must conform with the schedule outlined to recover, in case tires do not give the service the makers guarantee.

Motorists to Pay for Oiling Roads—Residents and motorists of St. Louis, who use the county highways, will be asked to contribute towards defraying the expense of oiling the 500 miles of macadam roads during the summer. The St. Louis county court has contracted for about \$30,000 worth of crude oil to be used on the roads. The estimated cost of oiling a mile of road is about \$250, of which residents along the stretch of road and motorists are expected to pay \$50 each.

Propose Texas Highway Commission—Governor Ferguson has been petitioned by members of the legislature to submit to that body the proposition of creating a state highway commission. A measure has been prepared by the house committee on roads, bridges and ferries and provides for the licensing motor cars by the state. The bill also provides that the state highway commission shall gather and collect all available scientific data on the matter of road building, the materials which may be cheapest and best utilized for this purpose in the various sections of the state.

Lozier Beauty Issue in Court—Beauty of design and color in the 1915 Lozier four, sufficient to attract and hold the attention of a woman pedestrian on a Wheeling, W. Va., street, probably saved Charles E. Peters, secretary and treasurer of the Conservative Life Insurance Co., a substantial sum as damages in a suit brought against him following an accident less than 2 hours after the car had been in the hands of its new owner. The woman testified that "the car was so pretty she held her eyes on it as it moved down the street and, therefore, clearly saw the accident." A small boy ran off the sidewalk directly in front of the machine and the woman's testimony brought a verdict of unavoidable accident in a \$10,000 damage suit filed against Peters.

Coming Motor Events

CONTESTS

- May 22-23—Track meet, Cleveland, O.
- May 22-23—Track meet, Centralia-Chehalis, Wash.
- * May 29—500-mile speedway race, Indianapolis, Ind.
- May 29-30—Track meet, Seattle, Wash.
- May 31—Track meet, Newark, N. J.
- June 5—Track meet, Pittsburgh, Pa.
- June 5-6—Track meet, North Yakima, Wash.
- * June 9—100-mile dirt track race, Galesburg, Ill.
- June 12—Track meet, Brighton Beach, N. Y.
- June 17—Track meet, Boston, Mass.
- June 19—Track meet, Hartford, Conn.
- * June 19—500-mile speedway race, Chicago.
- June 19-20—Track meet, Walla Walla, Wash.
- June 24—Hill climb, Uniontown, Pa.
- * July 3—300-mile race, Sioux City, Ia.
- July 4—Road race, Chico, Cal.
- July 4—Track meet, Oshkosh, Wis.
- * July 4-5—Speedway races, Tacoma, Wash.
- * July 5—Road race, Visalia, Cal.
- * July 5—Speedway races, Omaha, Neb.
- July 9—100-mile dirt track race, Burlington, Ia.
- July 31—Road race, Denver, Colo.
- August 14—Dirt track races, Janesville, Wis.
- August 20-21—Elgin road races, Elgin, Ill.
- August 28—100-mile dirt track race, Kalamazoo, Mich.
- September 6—Speedway races, Detroit, Mich.
- September 6—Speedway races, Providence, R. I.
- September 24-25—Track meet, Grand Rapids, Mich.
- October 1-2—Track meet, Trenton, N. J.

* Sanctioned by A. A. A.

SHOWS AND CONVENTIONS

- June 14-17—Summer meeting of Society of Automobile Engineers, Detroit and Great Lakes cruise.
- September 13-19—Pan-American road congress, Oakland, Cal.
- January 1-8—New York show.
- January 22-29—Chicago show.

Good Roads Activities

Uncle Sam Wants Road Knowledge—The United States Department of Agriculture has sent out approximately 15,000 sets of inquiry blanks requesting information as to the total mileage of public roads in each state and their cost, for the purpose of determining the best type of roadway at the least cost.

Highway to Lava Beds—Klamath county, Ore., will join Modoc county, Cal., in building a highway into the noted Modoc lava beds in northern California. On the main route are outlined a number of scenic attractions in a region covering approximately 150 square miles. There are cinder cones, ice caves, fissures and extinct volcano craters.

To Shorten Route in Texas—In order to shorten the motor car route between Fort Worth and other north Texas points and El Paso a first class cut-off highway will be built from Barstow to the Edwards ranch in Crane county. This link will connect the two sections of the improved road.

\$2,500,000 for Massachusetts Highway—Governor Walsh has signed the bill appropriating \$2,500,000 for improving the highways in the western part of the Bay state and the money will be available soon. This is an entirely separate appropriation from any that has been made for highway construction. The work will be done under the authority of the state highway commission and when the work is finished 25 per cent of the cost will be repaid to the state by the five counties that are to benefit by it.

Want Ban on Tractors Removed—Motorists and others interested in preserving good roads are much interested in what action will be taken by the Thrashers' and Farmers' Protective Association, which has just been organized in Baltimore county, Md., for the purpose of fighting the law passed at the last session of the legislature prohibiting the use of traction engines on improved highways of the state unless the cleats on the machines are protected to prevent them from damaging the roads. Soon after the passage of the measure some of the farmers started to fight

and several cases were carried to the courts. The farmers claim that with the cleats protected by blocks, iron bands or other means, the removal of the machines is dangerous. In Montgomery county the court upheld the contentions made by the farmers.

Propose Canadian Concrete Highway—A project is under way for the construction of a concrete highway from Winnipeg, Man., to Calgary, Alta. The scheme has the enthusiastic support of all the large towns and cities along the proposed route, and the roadway, if constructed, will be the first completed link in the great Canadian highway, known as the All Red route from Halifax to Vancouver.

Markers for Mohawk Trail—The Automobile League, of North Adams, Mass., has adopted markers to be used on the newly-finished Mohawk trail across the mountains in the western part of the state. They will be placed in position before the touring season begins. The markers are of enameled sheet metal about 2 feet long and 7 inches high with an Indian head and an arrow pointing the direction.

Good Roads Campaign—An active lecture campaign for good roads will be inaugurated in south Texas about June 1 under the auspices of the Bexar County Highway League. The party will make the trip in a special car which will be specially fitted up for demonstration work in good road building.

Will Mark Michigan Highways—The good roads committee of the chamber of commerce of Jackson, Mich., has made arrangements with telephone and telegraph companies, owners of public garages and proprietors of hotels, through which will be established a system of utilizing the poles of the first two named companies, by means of paint, to furnish guides between Jackson, Detroit, Lansing and Kalamazoo and also to mark the routes from Jackson to nearby outlying places. Various colors will be used for the different routes. At hotels and garages cards will be distributed, giving such information as "follow yellow poles for Detroit," etc.

With the Motor Clubs

Dealers' Body Announces Annual—At the weekly meeting of the Washington Automobile Chamber of Commerce it was decided that the first annual convention of dealers in this state will be held at Tacoma, Wash., July 2, at the time of the speedway races.

Club Secretary Gets Another Post—Frank M. Fretwell, secretary of the Automobile Club of Seattle, has been appointed active secretary of the Washington Automobile Chamber of Commerce. While this association had its inception but 6 months ago, it promises to become one of the most active and prominent associations in the state.

Organize Good Roads Club—Motor car owners in Excelsior Springs, Mo., have organized a club, the purpose of which is primarily to co-operate with other clubs in good road movements. The officers are Dr. O. C. Okell, president; Harry Silvers, vice-president; H. Wilhite, treasurer; W. J. James, secretary. The club started out with twenty members.

Cadillac 50,000 Mile Club—The Cadillac Owners' 50,000 Mile Club added more than 100 members to its already large list last month. The club is an unique organization of Cadillac owners who have driven their cars 50,000 miles or more. There are nearly 600 cars in California carrying the emblem of the organization—a small oval plate attached to the radiator—which is considered a badge of honor among motorists. Pasadena, Cal., leads in membership with Los Angeles and San Diego next in rank.

Motor Club Seeks Members—The membership committee of the newly-formed Northern Indiana Motor Club, of South Bend, Ind., is actively at work enrolling members. The first work is being instituted among the 2,500 motor car owners in St. Joseph county, after which the propaganda will be extended to adjoining counties. Arrangements are being made to entertain tourists on their way to the Indianapolis races, headquarters having been established at the chamber of commerce. The club will furnish current information on road conditions in its territory.

Akron, O.—H. A. Price Rubber Co., to make rubber articles; capital stock, \$15,000; incorporators, H. A. Price, E. E. McGalliard, John Rowley, Mary V. Price and Margaret McGalliard.

Akron, O.—Punctureless Auto Tire Co., to manufacture motor car tires; capital stock, \$100,000; incorporators, D. W. Alexander, Charles L. Rempes, Samuel A. Kessner, William Wetring and W. L. Keller.

Akron, O.—Summit Welding Garage & Machine Co., to operate a garage and machine shop; capital stock, \$10,000; incorporators, H. G. Haun, J. G. Chaifant, Clarence Becker, Charles Fiekes and V. M. Greer.

Albany, N. Y.—Elgin Motor Car Corp., to manufacture motor cars, trucks, etc.; capital stock, \$1,000,000.

Brooklyn, N. Y.—Wittenberg & Helmus, motor car business; capital stock, \$2,000; incorporators, Bessie Wittenberg, William Wittenberg and Edward Helmus.

Buffalo, N. Y.—Detroit Electric Car Co., motors, motor cars, etc.; capital stock, \$10,000; G. B. Pratt, H. and C. E. Seger.

Buffalo, N. Y.—Electric Car Co.; capital stock, \$10,000; incorporators, Irving C. Smith, Richard G. Pletzer, Louis G. Barth.

Buffalo, N. Y.—National Limousine Top Corp., to manufacture motor car tops and bodies; capital stock, \$25,000; incorporators, Edward L. Kunz, W. Lowell Grove, Fred Dobmeyer.

Cleveland, O.—Cleveland Free Tire Service Co., to deal in tires and accessories; capital stock, \$25,000; incorporators, D. W. Hanna, Jr., Charles E. Stern, William L. Burnhamer and Fred Grabien.

Cleveland, O.—Crystal Gasoline Co., to deal in oils and gasoline; capital stock, \$20,000; incorporators, C. R. Lebow, Joseph J. Klein, S. E. Davis, B. T. Herchey and M. Emerman.

Cleveland, O.—Perfection Spring Service Co., to manufacture motor car accessories; capital stock, \$25,000; incorporators, B. A. Gage, C. S. Wachner, R. E. Bixby, C. A. Mason and A. D. Howe.

Columbus, O.—Thomas Automatic Fire Engine Co., to operate motor driven fire engines; capital stock, \$100,000; incorporators, J. A. Thomas, Willis G. Parsons, Charles B. Cranston, Chalmers D. Moore and Samuel A. Hoskins.

Detroit, Mich.—Parkview Auto Garage & Repair Co.; capital stock, \$2,000; incorporators, Edmund H. Jenks, Elverton Jenks, William A. Smith.

Dover, Del.—Elgin Motor Car Corp.; capital

Recent Incorporations

stock, \$1,000,000; incorporators, F. R. Hansell, C. H. B. Martin and S. C. Seymour.

Flint, Mich.—Hamilton Radiator Co., to make radiators and other motor car parts; capital stock, \$10,000.

Greenspring, O.—Greenspring GaPage Co., to operate a garage; capital stock, \$10,000; incorporators, Oscar Myers, P. J. Younglove, P. T. Perl, E. E. Nelkirk, C. G. Robinson.

Guelph, Ont., Can.—Guelph Tire & Rubber Co., to manufacture rubber goods; capital stock, \$350,000; incorporators, Alexander H. Davidson, and others.

Kingston, N. Y.—Ulster Garage, Inc.; capital stock, \$5,000; incorporators, J. Mewer Barnhart, Chauncey E. Snyder and Martin H. Snyder.

Middletown, O.—Leib Auto Wheel Co., to manufacture motor car wheels; capital stock, \$5,000; incorporators, L. P. Geary, F. W. Leib, E. L. Sherman, Jr., Albert Auberle and P. E. Linzie.

Milwaukee, Wis.—Demerath Two-Minute Quick Adjustable Rim Co., to manufacture resilient wheels, hubs and tire rims for motor cars; capital stock, \$25,000; incorporators, Joseph Demerath, Theodore Sternemann and Dr. Edwin M. Sullivan.

Milwaukee, Wis.—Wisconsin Auto Exchange; capital stock, \$10,000; incorporators, Harry Kohn, Fred W. Smith, N. L. Bierbach and L. J. King.

New Brunswick, N. J.—Rutgers Garage Corp., motor car business; capital stock, \$20,000; incorporators, William J. McDade, Albin J. Boley, Margaret McGerry.

New York—Carl H. Page Motors Co.; capital stock, \$100,000; incorporators, Elizabeth S. Lettze, Edward P. Lettze, Homer F. Sanford.

New York—J. E. Salmon & Co., to deal in motor car supplies, etc.; capital stock, \$10,000; incorporators, Arno W. Geebelein, Fay F. Stanton, C. Helen A. McArdle.

New York—R. B. Stanley Mfg. Co., to manufacture motors; capital stock, \$10,000; incorporators, Ralph B. Stanley, Alice D. Stanley and George B. Palmer.

New York—Auto Parts Co., to manufacture motor car parts of all kinds; capital stock, \$5,000; incorporators, Wm. H. Kelly, Max M. Hirszen and Amedeo A. Bertini.

New York—Heindl & Rothvoss, motor car business; capital stock, \$3,000; incorporators, Martin J. Heindl, Arnold Rothvoss and Edward J. Apelin.

New York—Hoffman Motor Car Co.; capital stock, \$10,000; incorporators, M. J. Neumann, H. H. Waller and A. L. Friedberg.

New York—Carl H. Page Motors Co., motor car business; capital stock, \$100,000; incorporators, Carl H. Page, Henry B. Deary and Aloysius J. Bryant.

New York—Sheephead Bay Velodrome Corp.; capital stock, \$5,000; incorporators, Thomas J. Gillis, Richard Butler and Daniel Lang.

Niles, Mich.—State Motor Sales Co., to deal in motor cars and accessories; capital stock, \$30,000; incorporators, George Corell, J. M. Vann and Charles E. White.

Omaha, Neb.—Consumers' Automobile Supply Co.; capital stock, \$5,000; incorporators, Donald D. Troup, R. E. Smith and Wallace Troup.

Omaha, Neb.—Master Sales Co., to deal in motor cars; capital stock, \$25,000; incorporators, Moses S. Miller, Milton S. Livingston, George W. Coe and John W. Parkhurst.

Philadelphia, Pa.—Utility Shock Absorber Co., motor car specialties; capital stock, \$5,000.

Portsmouth, O.—Jitney Co., to operate a bus line; capital stock, \$1,000; incorporators, E. E. Westwood, J. E. Startling, W. J. Hariz, A. Z. Blair, Jr., and A. H. Stewart.

Racine, Wis.—Wisconsin Metal Products Co., capital stock, \$20,000; incorporators, J. H. Dwight, Taylor Jelliffe and Arthur R. Janes.

Sioux City, Ia.—Adams-Alexander Auto Co., capital stock, \$35,000.

Richmond, Va.—M. D. Stone Motor Co., motor car business; capital stock, from \$10,000 to \$50,000; incorporators, M. D. Stone, F. H. Dula.

Rochester, N. Y.—Rochester and Suburban Jitney Co.; capital stock, \$1,000; incorporators, William H. Mikel, James W. Gould and Richard R. B. Powell.

Wilmington, Del.—Monarch Motorcar Co., capital stock, \$400,000.



Among the Makers and Dealers



BRANCH Office Opened—The Fisk Rubber Co. has opened a branch in Columbus, O., located at 206 East Gay street, in charge of H. S. Gockenbach.

Speedometer Service Station—A speedometer service station, representing the Stewart-Warner Speedometer Co., for the Northwest, has been opened in Portland, Ore.

Russel Adds to Plant—The Russel Motor Axle Co., North Detroit, Mich., has found it necessary to make an addition, 120 feet by 120 feet, to its plant to care for increases in axle equipment for commercial motor cars.

Fire Destroys Garage—The Hinman garage at North Platte, Neb., was destroyed by fire recently, twenty automobiles being burned; loss \$20,000 to \$30,000. A motor-driven fire truck stored in the garage was saved, but could not be used to fight the fire.

Peoples Rubber Co. Moves Plant—The chamber of commerce of Barberton, O., has completed negotiations for the removal of the plant of the Peoples Rubber Co. from Akron to Barberton. The old plant of the Summit Rubber Co. will be equipped and about one hundred men will be employed.

Case Building New Branch—The J. I. Case Threshing Machine Co., Racine, Wis., has started construction work on its new branch house and garage at Madison, Wis. The building will be fireproof, 100 by 140 feet, two stories high, with a basement 100 by 184 feet to be devoted to motor car business exclusively. It will cost about \$50,000.

Tire Records Broken—The Goodyear Tire and Rubber Co., of Akron, O., reports all records broken for April. More tires were delivered and greater tonnage shipped than in any other month in the history of the company, the total tonnage being equivalent to 524 cars, or 109 cars more than for the same month last year.

Ford Plant for Winnipeg—Work will begin immediately on the new assembly plant of the Ford Motor Co. in Winnipeg. The factory, which will be a four-story structure, will cost upward of \$250,000, and will have track facilities for the rapid handling of raw material and finished cars. The decision to erect this plant came as the result of large

increases in demand that have developed in Western Canada during the last year.

Fisk Rubber Co. Branch—The Fisk Rubber Co. shortly will have a new branch in Portland, Ore., work having begun on a one-story and basement brick building, 65 by 90 feet.

Plant Contracts Awarded—The general contract for the Falls Rubber Co.'s new plant at Cuyahoga Falls, O., has been awarded to the Akron Storage and Contracting Co. The structural steel contract went to a Pittsburgh concern. The building will be 80 by 200 feet, three stories high, of brick and steel construction.

Lusitania Shipment Ordered Duplicated—The Gramm-Bernstein Co., Lima, O., has received orders to duplicate at once a large order for truck parts which was shipped to England on the Lusitania. The parts were to complete equipment of trucks which had been shipped previously. The plant started on the order at once.

Kelly-Springfield Dividends and Directors—At a meeting of the stockholders of the Kelly-Springfield Motor Truck Co., Springfield, O., a dividend of 4 per cent on preferred stock was declared. The stockholders elected these directors: Capt. Marion McMillin, A. P. Lathrop, C. W. Young, E. S. Kelly, J. B. Cartmell, H. E. Freeman, C. L. Bauer, J. L. Geddes and C. N. Jellissee.

Kissel Ambulances for Serbia—The Kissel Motor Car Co., Hartford, Wis., has booked a repeat order for ambulance trucks from the government of Serbia. The deal was closed in New York by President George A. Kissel and calls for thirty ambulances. The Kissel company shipped a number of trucks to Serbia last fall. The Hartford shops have reached the greatest capacity ever attained and are employing nearly 1,000 people.

Build 171 Fords in a Day—The Ford, Ont., plant of the Ford Motor Co. of Canada, Ltd., built and shipped 171 cars on April 23, breaking its best previous record on April 13, 1915, by five cars. Coming as it did 2 days after the minimum wage of \$4 daily went into effect, and the day shortened from 9 to 8 hours, Ford officials voiced the opinion that the change was welcomed by the

1,700 employees of Ford, who wished to show their appreciation.

Studebaker Branch Changes Hands—Arthur Soule, formerly of Windham, Me., who has been in charge of the Chicago agency for the Studebaker for the last 5 years, has bought out the Studebaker agency at Portland, Me.

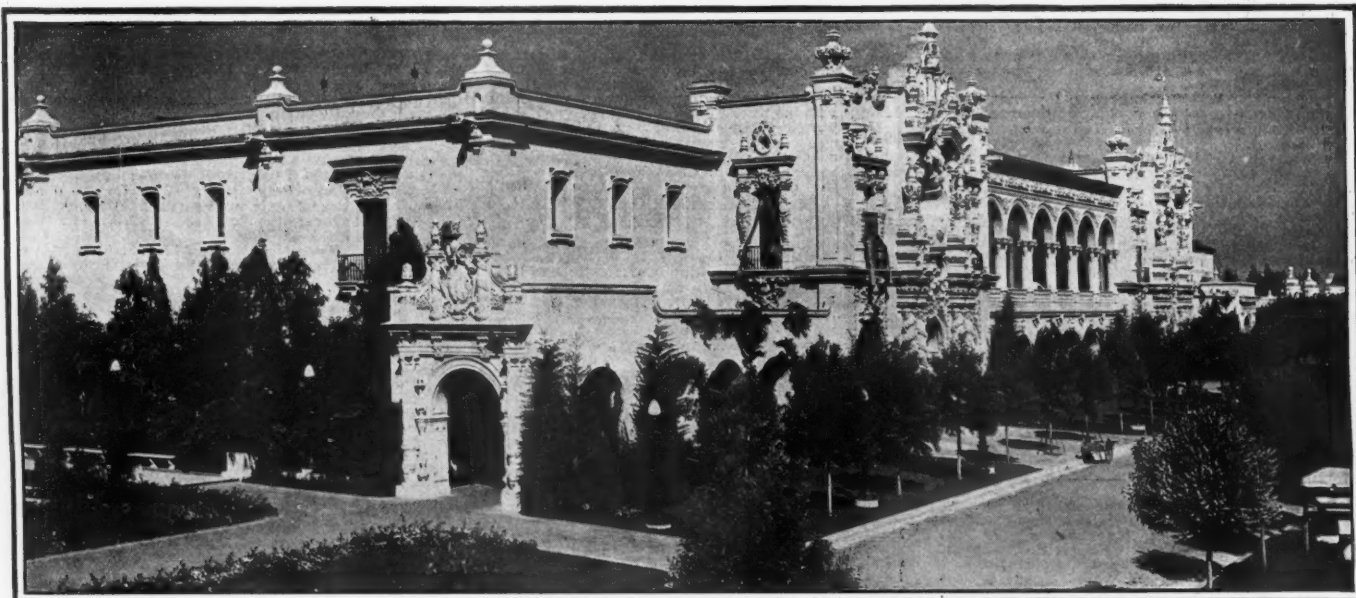
Enameling Concern Buys Plant—The Fickling Enameling Corp., Long Island City, N. Y., has purchased the enameling plant of the Dunlap Wire Wheel Co. and is prepared to continue the service supplied by the latter concern.

New Kelly-Springfield Plant—The Kelly-Springfield Tire Co. is planning a \$1,000,000 plant, but it is rumored the company will not build in Akron, O., its present home. The present plant is handicapped by lack of private water supply and was closed recently for that reason.

Former Truck Plant Shrapnel Factory—The big plant, formerly used by the American Locomotive Co., at Providence, R. I., in making Alco trucks, is to be reopened to manufacture brass fuse heads for shrapnel to go to the allies. Installation of new machinery has begun and the plant will give employment to about 1,000 men.

Wilson Truck Ready for Market—The J. C. Wilson Co., of Detroit, Mich., announces that it is ready to market the Wilson 1½-ton motor truck, which it has been designing, testing and perfecting for 1½ years. The final model has been completed and the factory will begin producing at once. The company plans to confine its market to the domestic field.

Fisk Enlarging Factory—The Fisk Rubber Co., Chicopee Falls, Mass., has started construction on three additional buildings for its factory. The new additions will give the company a two-story branch store and service station, a six-story reinforced concrete storehouse, 110 by 310 feet, and a six-story office building 60 by 100 feet. At the present time there is under construction a seven-story addition to the Nos. 7 and 8 mills of the company. When the new buildings are finished it will give the factory a floor space of 22 acres instead of the 14 it has at present.



VARIED INDUSTRIES BUILDING HOUSING MOTOR EXHIBITS AT SAN DIEGO EXPOSITION



Brief Business Announcements



WASHBURN, Wis.—T. H. Robinson has established a supply and accessory store here.

Flint, Mich.—The Buick Motor Co. has taken out a permit for the construction of a 2½-story factory addition. The estimated cost is \$22,500.

Washburn, Wis.—A garage and motor livery has been established here by Leo and Harvey DeMars, doing business under the style of DeMars Bros.

Milwaukee, Wis.—The Garage Equipment Mfg. Co., originally incorporated as the Garage Equipment Co., has made a second change in its style and henceforth will be known as the Gemco Mfg. Co.

Boston, Mass.—S. A. Skeetop, who formerly was identified with the Lexington line here and later in Providence, R. I., has returned to become manager of the H. S. Waite Co., agent for the Grant in the Bay state.

East Palestine, O.—R. G. Nelson, formerly manager of Nordyke & Marmon Co.'s Chicago branch, is now with the sales department of the McGraw Tire and Rubber Co., of this city.

Omaha, Neb.—H. E. Frederickson, for 2 years actively connected with the Lincoln Highway Association in the capacity of state consul of Nebraska, has resigned, his other

duties requiring too much of his time. The association will choose his successor from a field of six or seven now under consideration.

Sturgeon Bay, Wis.—Frank and Bernard LeMere are establishing a garage and machine shop in this city.

Cleveland, O.—Ernest Wooler, formerly designing engineer for the Continental Motor Mfg. Co., Detroit, Mich., is now with the Chandler Motor Car Co., of this city, in the same capacity.

Boston, Mass.—G. L. Osborn, who has been a member of the sales force of the Beacon Motor Car Co. for some time, selling the Peerless line, resigned last week to accept a position with the Frank E. Wing Co., Boston, New England distributor for the Marmon.

Detroit, Mich.—Charles D. Todd has purchased for \$500 the personal property consisting of machinery, equipment and parts which formed part of the assets of the bankrupt Sta-Rite Corp. Utica, Mich., the concern that made the Sta-Rite carburetor.

Portage, Wis.—The Northwestern Storage Battery Co., Chicago, is negotiating with the local business men's association for a permanent location for the business. Local support is being given in such measure that the removal is considered assured. The company

will change its name to Petschel Storage Battery Co.

Boston, Mass.—A. S. Holly, until recently manager of the J. C. Tucker Co.'s local branch, handling the Chase trucks, has been made manager of the R. E. Taylor Corp., which handles the Garford line in New England with local headquarters.

Detroit, Mich.—The Security Trust Co. was appointed trustee in bankruptcy for the Detroit Body Co., which filed a petition in bankruptcy as reported in the issue of Motor Age of April 29.

Chicago—W. H. Tripp, former eastern advertising manager of the Butterick publications, and who has been in national advertising and merchandising 22 years, is now president and treasurer of the Singleton-Tripp Co., formerly the J. F. Singleton Co.

Algoma, Wis.—E. A. Klatt has retired from the garage firm of Klatt & Rider and purchased the electrical business of Julius Meyer.

Philadelphia, Pa.—Title to property at 312-14 South Main street has been taken by the Thornton-Fuller Automobile Co., and following extensive alterations the company will occupy the building as a service station for the Simplex and Dodge cars.

Recent Agencies Appointed by Motor Car Manufacturers

PASSENGER CARS

Town	Agent	Make	Town	Agent	Make
Bad Axe, Mich.	A. J. Todd	Alter	Mexico, Me.	Paul E. Coll	Chandler
Bad Axe, Mich.	J. G. McDonald & Robert Wurm	Saxon	Neola, Ia.	T. W. McDermot	Chandler
Berthoud, Colo.	Berthoud Garage	Grant	Newark, O.	Clyde Bowman	Oldsmobile
Boston, Mass.	A. V. Shaw	Scripps-Booth	New York, N. Y.	Carl H. Page Motor Co.	Mitchell
Boston, Mass.	Hupp Motor Car Co.	Hupmobile	New Haven, Conn.	Dr. F. G. Atwood	Saxon
Cassopolis, Mich.	Elmer W. Shafer	Studebaker	New Haven, Conn.	Chevrolet Motor Co.	Chevrolet
Canton, O.	W. A. Kennedy	Chevrolet	Northville, N. Y.	W. L. Kested	Chandler
Canon City, Colo.	Midland Trall Garage	Grant	Norwalk, O.	C. S. Bateham	Chandler
Circleville, O.	H. M. Crites	Pilot	Nugent, Ia.	L. F. Richardson	Chandler
Cleveland, O.	H. H. Gegelein	Lozier	Old Town, Me.	Old Town Motor Co.	Chandler
Colville, Wash.	J. F. Stack	Buick	Palouse, Wash.	Cowan-Fallis Motor Co.	Reo
Colorado Spgs., Colo.	H. N. Richmond & Sons	Grant	Portland, Ore.	Edward Egli	Metz
Dixon, Ky.	Poole Motor Co.	Maxwell	Portland, Me.	Peterson Motor Co.	Ford
Dickson, Tenn.	Standard Motor Co.	Maxwell	Portland, Me.	Arthur Soule	Studebaker
Dowagiac, Mich.	Nelson & Neff	Chandler	Portland, Me.	Alexander & Worcester	Oldsmobile
East Liverpool, O.	Swaney & Wilmer	Chandler	Providence, R. I.	Howard G. Duckworth	Maxwell
Eaton, Colo.	C. W. Schultz	Grant	Providence, R. I.	J. A. Welch	Oldsmobile
Elgin, Ill.	A. F. Luscher	Chandler	Pulaski, Va.	P. C. Massey	Chandler
Fort Collins, Colo.	E. A. Sinnard	Studebaker	Randall, Ia.	G. P. Christianson	Chandler
Fort Morgan, Colo.	A. C. Gillette	Grant	Richmond, Va.	Commonwealth Motor Co., Inc.	Oldsmobile
Fremont, Neb.	R. B. Schurman	Chandler	Rochester, Minn.	C. D. Brown	Franklin
Gadsden, Ala.	Gadsden Hardware & Supply Co.	Chandler	San Diego, Cal.	Karl Martin	Auburn
Galveston, Tex.	Taylor Motor Co.	Chandler	Savannah, Tenn.	Savannah Motor Co.	Maxwell
Galesburg, Ill.	A. H. Schwank	Chandler	Seranton, Pa.	Wickham Bros.	Chase
Gallon, O.	W. E. Evans	Pilot	Seymour, Wis.	Otto Motor Co.	Jeffery
Gillette, Wyo.	Arthur Harvey	Grant	Sewickley, Pa.	Auto Service Co.	Chandler
Gouverneur, N. Y.	Frank H. Farmer	Oldsmobile	Spencer, Ia.	Hurd Auto Co.	Chandler
Granby, Colo.	A. P. Curtis	Grant	Spokane, Wash.	Christopherson-Hooring Co.	Interstate
Grand Junction, Colo.	Western Colo. Motor Sales Co.	Grant	Springfield, Mass.	I. L. Dimm	National
Greenville, Ky.	Kirpatrick, Eaves & Shutt	Maxwell	Staunton, Ill.	Charles Blackwell	Chandler
Holyoke, Colo.	Phillip Zimmerman	Grant	St. Johns, Mich.	A. T. Smith	Ford
Hubbard, Ore.	L. M. Meeker	Haynes	Sterling, Ill.	John Hoppler	Chandler
Idalia, Colo.	Geo. T. Conrad	Grant	Sturgeon Bay, Wis.	John Peltier	King
Jewell, Ia.	Iver Iverson	Chandler	Sturgeon Bay, Wis.	La Mere Bros. Co.	Briscoe
Knierum, Ia.	Frelmuth Auto Co.	Chandler	Sturgis, Ky.	Stone Motor Co.	Maxwell
Lake Mills, Ia.	Winnebago Auto Co.	Chandler	Tacoma, Wash.	Washington Auto Co.	Pullman
Lima, O.	J. M. De Vore	Chandler	Tacoma, Wash.	St. Helens Auto Sales Co.	Buick
McMinnville, Ore.	Jack Spence	Oldsmobile	Taheeran, Ill.	E. P. Benscote	Chandler
			Wakeham, O.	Wakeham Garage	Chandler

COMMERCIAL CARS

Coffeyville, Kan.	Coffeyville Garage	Koehler
Detroit, Mich.	Moritz-Mullen Co.	O. K.
Detroit, Mich.	Metropolitan Motor Co.	Bessemer
Everett, Wash.	Commercial Garage & Auto Co.	Denby

Jackson, Mich.	Thomley Auto Co.	Denby
Minerva, Ky.	C. L. Mains & Co.	Koehler
Mt. Vernon, Wash.	Lewis Allen	Signal
Warren, Pa.	Charles A. Hubbard	Koehler



The Motor Car Repair Shop



Simple Means by Which the Car May be Protected Against Theft

WHILE early motor cars would stand without hitching, modern cars are so easy to operate that there is every inducement for the joy-rider. There are so many people who are familiar with the mechanism that the removal of the switch key, or turning off the gasoline no longer is sufficient to keep the motor car at home. If the car is insured against theft, it is the duty of the owner to avoid having his machine stolen, in order to keep down the rate of insurance. Even if the car is insured, the owner generally has a number of accessories and is so familiar with the car that he suffers a distinct loss if the car is stolen. Most men lock the doors of their houses when they go out, and it would seem equally sensible to lock a motor car when it is left unattended on the street. Even if it is only a joy-ride and the car is eventually recovered, great damage may be done to the car, for joy-riders all too frequently land in a ditch.

The time element is most important in preventing theft, for the would-be thief must generally act quickly if he is to escape without detection. While a clever thief, with ample time and sufficient tools, can cut a lock, it is seldom that a thief has either the tools or the time. Also, the breaking of a lock is apt to attract the attention of passers-by. The removal of some small, but essential part is one method by which car owners can insure the safety of their cars, as it is not probable that the thief will have spare parts.

Ignition Switch Easily Operated

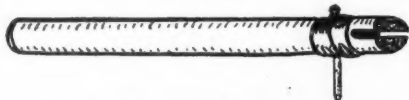
It is not advisable to place much reliance on the removal of the ordinary switch key, because so many people have switch keys for the more popular types of cars. The average switch can quickly be turned to the operative position with a nail or a piece of wire, as is often done by motorists who have mislaid their regular keys. Or, by loosening a few screws the switch cover can be removed and the switch turned on or off, as desired. By raising the hood, it is generally easy to attach a wire across the switch to act as a jumper, so that the car will run. For this reason, locks on the hood are an advantage, and they also prevent meddlesome persons disturbing the adjustments. But as all this work takes time, a lock on the coil switch has great advantages, especially as it makes unnecessary the carrying of extra locks and it is always locked when the current is turned off.

In some cities it is the custom to turn the steering wheels towards the curb when stopping and then the left front wheel is locked to the frame by means of a chain passing around the tire and rim, and

around the spring. If the chain is covered by a leather or rubber tube, it will not mar the spokes. Steel cable can be used in place of the chain and does not rattle as much when carried in the car.

Cars using a starting crank can have the crank locked out of use by wrapping a chain around the crank axle and fastening the ends of the chain with a padlock. This prevents the crank being pushed in far enough to engage the ratchets on the crankshafts. Of course the motor can be started by pushing the car and if batteries are provided, the motor can sometimes be started on the spark, unless the air valve is opened or the gasoline shut off as the motor stops.

When the car is left without locking it, a wise driver will leave the air valve fully opened, the gasoline shut-off, and perhaps one of the terminals disconnected, so as to discourage a possible thief or joy-rider as much as possible. Other methods of lock-



A PET-CKOCK OPENER MADE FROM A BROOMSTICK

ing the car, such as locking the gearshift lever in neutral position, have the advantage that a car left in a public garage can be pushed around the floor for washing or cleaning.

Another means of protection against possible theft and joy-riding is to give the car a distinct individuality, so that the owner or any of his friends can recognize the car at a glance. The painting of the car may be done in some unusual color scheme, or the car may be fitted with accessories to give it a distinctive appearance, or some other changes may be made in the outward appearance of the car. It also is well to place a number of secret identification marks, such as the owner's initials, and have them stamped in such parts of the car that they could not well be discovered without taking the entire car apart. Even if the thief finds some of these marks, he is not likely to find them all, and they may prove a valuable aid in recovering stolen property.

Accessories Need Watching

Having guarded the car, the accessories should be watched, because they are more easily carried off and sold. One of the most important of the minor details to keep locked is the tool box, for locks may prove of small value if the car owner provides the thief with a complete kit of tools to open them. The parts most frequently stolen are the tires, because they are easily

carried without causing comment, and they find a ready sale. Tires carried on the rear, or even on the running board, should be fastened with metal clamps or a chain and padlock. Leather straps are so quickly cut that they furnish no protection. The tires should be fastened to some part of the car that cannot be easily removed.

Gasoline tanks seem to have a peculiar attraction to thieves in some cities. The clamps with which they are fastened can be readily turned without tools, but by means of a metal strap or a stout chain passed around the neck of the tank and through a couple of slots in the running board, the tanks can be trusted to remain in place.

Pet Cock Opener

The pet-cocks for measuring the oil levels on some motors are placed in a rather inaccessible position and so are not used nearly as much as they should be. But if a slot is cut in the end of a broomstick, as shown herewith, and then the stick bound with tire tape to keep the slot from splitting the stick, the slot can be slipped over the petcock handle and the oil level determined without getting under the car. If a long wire nail is driven through the stick it can be conveniently used to clean out the opening and to make sure that it is not clogged with dirt, as so often happens.

The Value of Quick Action

"There's a slight knocking somewhere in your car Mr. H. and I believe you should give the matter attention." "Oh, that's a small affair; the knock means nothing; it will go away." This brief conversation took place recently in the front compartment of a medium-priced car, one which sold for \$1,200. The owner of this car did not heed the words of his passenger with the result that in 3 days, it was found that the clutch thrust bearing had been crushed and two of the gearset bearings so badly shattered as to need replacement—cost \$22. Here is a case where quick action was necessary, where an expenditure of a few dollars and 1 hour's time meant the saving of 10 times that amount. A slight knock may mean nothing, but it always is best to have the trouble investigated, for the average owner hardly is in a position to make a correct diagnosis from the front seat. Don't imagine that because previous knocks have vanished through the night, that all knocks will. Thumping and knocking is an unnatural condition in a car, just as a cough is in a man. Allow a cough or cold to go unattended and a more serious condition may result. Allow even the slightest knock to continue and a healthy-looking repair bill will follow.

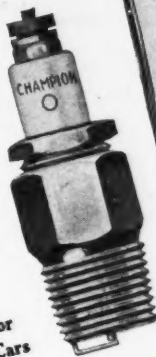


"O"

Special
1/2 inch

Price
\$1.00

Special For
Overland Cars

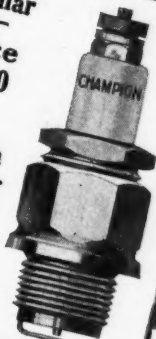


Champion

Regular

Price
\$1.00

1/2-inch
Studebaker
7/8-18
Maxwell
Regular
Factory
Equipment



Champion

One-Piece
Heavy
Stone
All Sizes

Price
\$1.25

For High
Powered
Automobiles,
Trucks and
Stationary
Engines



Champion

"TOLEDO MADE FOR THE WHOLE WORLD'S TRADE"

Speed Tested Reliability

We make sure of Champion Reliability—leave nothing to chance.

For each separate motor design, we make a specially designed Champion Plug.

But we do not stop at technical perfection.

We install the technically perfect plugs in the motor they must serve.

Then we give that motor such continuous speed tests as it would get only in racing.

And we give it extended load tests such as it would get only on rare occasions in normal use.

We continue these tests until we have developed Champion Plugs that will stand up under all the different kinds of punishment we can give them in their particular motor.

That's why reliability is inherent in Champion Spark Plugs.

That's why they are sold under such a sweeping guarantee.

The Champion Guarantee

Complete satisfaction to the user—free repair replacement or money back.

Our Profit Sharing Agreement with Dealers

Any dealer whose strong-box does not already contain our 1915 Profit Sharing agreement should ask his Jobber's Salesman about it, or write to us at once.

Champion Spark Plug Co.

1508 Upton Ave., Toledo, Ohio



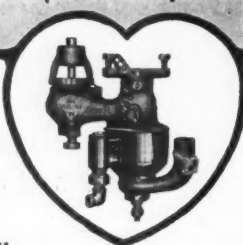
**America's
Real
Service
Carburetor**

**Champion
Road
Racing
Carburetor**

The infallible test of a carburetor's efficiency, is real service over an extended period of time.

SCHEBLER holds no one-hour economy, speed or hill-climbing records, but does hold every important contest record for protracted service, in America.

The most perfect performance of a carburetor officially recorded in gas engine history is that of the SCHEBLER Model R, which, without changing adjustment, completed the 337-HOUR Moline-Knight test in the laboratory of The Automobile Club of America, establishing a world's record for power, economy, flexibility and endurance.



SCHEBLER won first and second places in the Los Angeles-Phoenix 696-Mile Road Race—the fiercest and longest contest of its kind ever staged. SCHEBLER has won over 85%

of the official motor car tests in America.

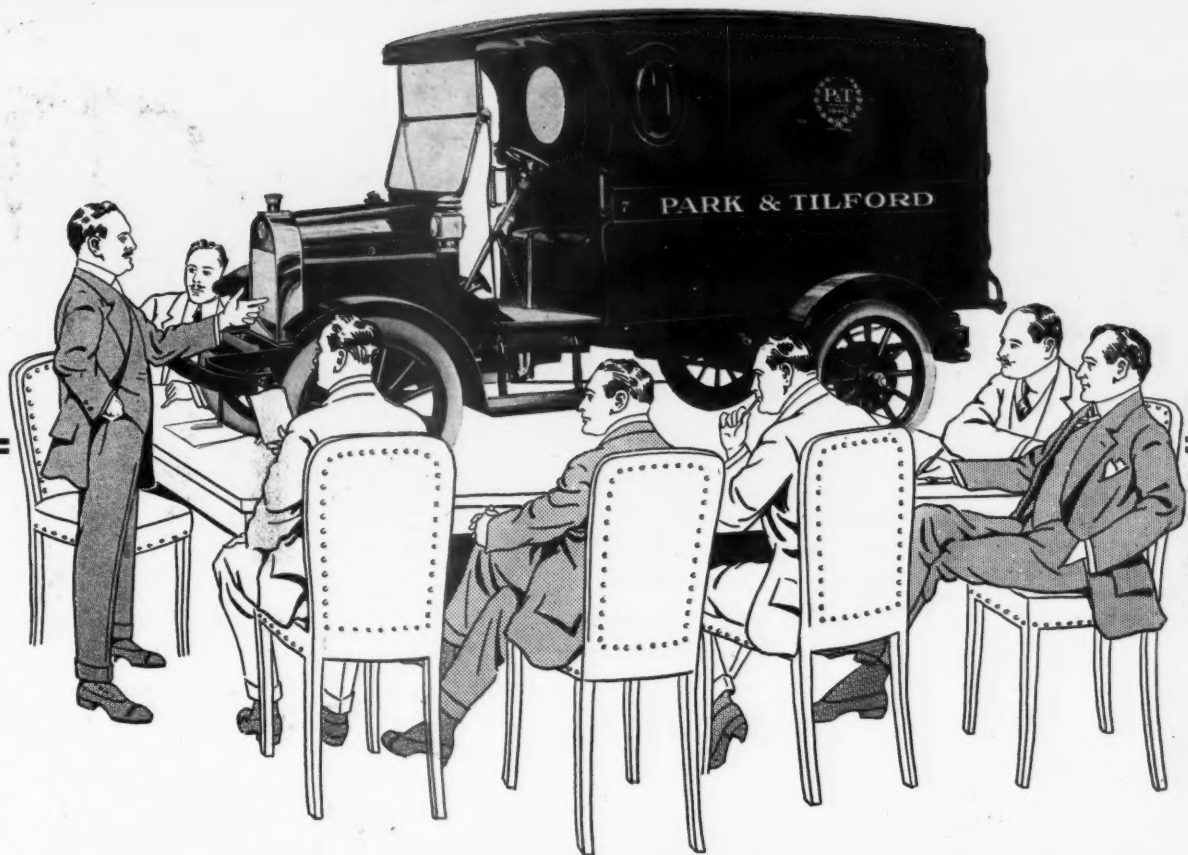
SCHEBLER is champion road-racing carburetor.

SCHEBLER is the only American carburetor that ever won a Speedway Race at Indianapolis. In two races out of a possible four it has come home winner.

Demand SCHEBLER on your new car, put one on your old car! Visit us while in Indianapolis.

WHEELER & SCHEBLER

Indianapolis, U. S. A.



"Are Our Agents Making Money?"

A very large dividend was recently voted by the Board of Directors of one of the largest automobile concerns in America. One director, to the surprise of the others, said—"Gentlemen, while this is very satisfactory, I want to know if it is permanent. Are our dealers making money? This is of vital importance, for upon their success depends our future success."

This is our belief—and that is why VIM dealers are making money. Our policy has ever been to build our success upon that of our dealers.

In less than two years we have become the largest exclusive producers of commercial

cars in America and are represented in 215 cities. VIM is the money maker for dealers, whose quick success has made our rapid growth the sensation of the truck industry, all because of VIM low list price and freedom from competition, thus absolutely dominating the light delivery field, displacing equally as many one-ton trucks as it displaces light converted pleasure cars.

LET US SEND YOU THE NAMES OF VIM DEALERS NEAR YOU. Investigate their success and find what a similar VIM opportunity for permanent business awaits you in your territory.

7 Body Types, \$635 to \$725 Complete

Northway motor, 15-20 H. P., 4 cyl., water-cooled Truck Motor, 2", 3 bearing crank shaft.

Northway, 30-35 H. P., 3-speed sliding-gear transmission.

Northway, 30-35 H. P., cone clutch.

Weston-Mott 30 H. P., axles, Brown-Lipe differentials.

Spicer 35-40 Dust-proof Universal joint.

Parrish Manufacturing Company pressed steel frame.

Firestone or Goodyear Tires. Schwarz Wheels.

1/2 TON CAPACITY
VIM
DELIVERY CARS

All VIM cars delivering after April 1st include the following refinements:—

- 6" additional wheelbase
- Improved shape radiator
- Sloping hood improved dash
- Hinged starting crank
- 36" front springs
- 12½ brake drums
- Full three-quarter float axle
- Improved brake equalizing system with individual countershafts and pull hand brake
- Tungsten steel valves in motor
- Lower gear ratio
- Automatic clutch shoe lubrication
- Substantial spring-type bumper
- Spark and gas sectors mounted on quadrant
- Heavily-rimmed raised fenders
- Bodies larger capacity, improved in design and finish

Made in Philadelphia by

The Touraine Company

BROAD & CUMBERLAND STS.

SOLD IN 215 CITIES



FEDERAL

Federal "Rugged Tread" Tires are scientifically designed in construction and perfectly balanced in materials. In all those qualities that provide enduring satisfaction to the motorist, they are unexcelled. We believe they stand supreme for extra service.

Exclusive features of design and processes, added to the experience gained in seventeen years of tire manufacture, give Federal "Ruggeds" extra wear, extra safety, extra freedom from trouble and annoyance.

The Exclusive Federal Double - Cable - Base

adds hundreds of miles to the life of every Federal Tire. The heavy endless double steel cables anchor the tire firmly to its rim and permit the use of a soft, flexible bead filler, instead of the ordinary hard, sharp-pointed bead-filler—thus providing the necessary elasticity at the flexing point just above the rim.

This scientific construction eliminates the four most common and costly tire troubles.

**No More Rim-Cutting—No More Tube Pinching
No More Danger of Tire Slipping Off
No More Blow-Outs Just Above the Rim**

Beveled studs add more life to "Rugged Treads." The studs of the outer rows are of graduated thickness, tapering down to the outer edges. Therefore they cannot project beyond the center studs, after slight wear, and press into the fabric to break it and cause blow-outs. This design is typical of the scientific construction of Federal Tires.

Federal "Ruggeds" are a safeguard against skidding on slippery pavement or muddy road. The big, broad, rugged studs give safe, sure traction.

All Styles and Sizes—"Rugged" and Plain Treads

Dealers: We will be glad to send responsible dealers our proposition and price list on application.

Federal Rubber Mfg. Co.
Milwaukee, Wis.

**Branches, Distributors and Service
Stations in all Principal Cities**

SUPREMACY



**-and
Now
Comes
the New**

GARFORD HAND OPERATED WARNING SIGNAL for \$38.50

Ready for immediate delivery to the thousands of drivers who have been waiting for a 1915 horn sensation from the GARFORD camp.

Motorists who know GARFORD quality, refuse other horns—regardless of price. They wait for the exclusive GARFORD improvements that determine the value of the best warning signal.

45° Plunger Works the Natural Way

Sit down and try it. Your hand naturally moves at an angle of 45° without guidance.

And it's the same with your elbow—if you want to operate the new GARFORD when both hands are otherwise engaged.

Safety in every warning signal depends on ease in operation. The natural way is the easiest way.

The GARFORD plunger does not require a blow for operation. An easy push gets a quick, sure, decisive re-

sponse. Special bracket holds horn firmly in place. Can't come loose. Horn will not stop, catch or clog. No dirt can get inside. **The GARFORD always works.**

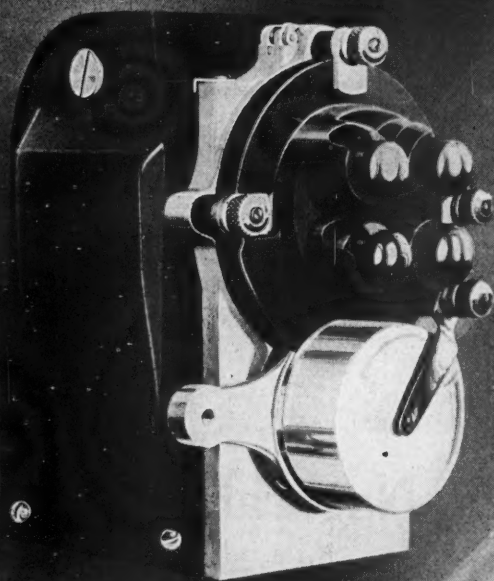
Finished in black and nickel (standard), black and brass, or all black. An attractive addition to any car. Guaranteed. Get yours today.

Dealers who already have their consignment of GARFORDS are doing big business. You could do the same. Good profits. Write today.

GARFORD MANUFACTURING COMPANY
Elyria, Ohio

Branch: Garford Mfg. Co., Kansas City Mo. **Distributors:** Dean Electric Co., Seattle, Wash.; Dean Electric Co., Los Angeles, Cal.; Sumter Telephone & Supply Co., Sumter, S. C.

DIXIE 20TH CENTURY MAGNETO



SIMPLICITY

In simplicity of construction the DIXIE stands pre-eminent—magneto mystery passes away with the advent of the DIXIE as every part is instantly accessible.

The DIXIE breaker is stationary and platinum breaker points and breaker mechanism are readily at hand for any adjustment.

The simple field coil of the DIXIE is housed in the arch of the magneto, away from water, grease and dirt, and coil and condenser can be readily replaced in a few seconds' time without removing the machine from the engine.

This overcomes all possibility of interference with magneto timing—a detail of simple construction of great value to the car owner.

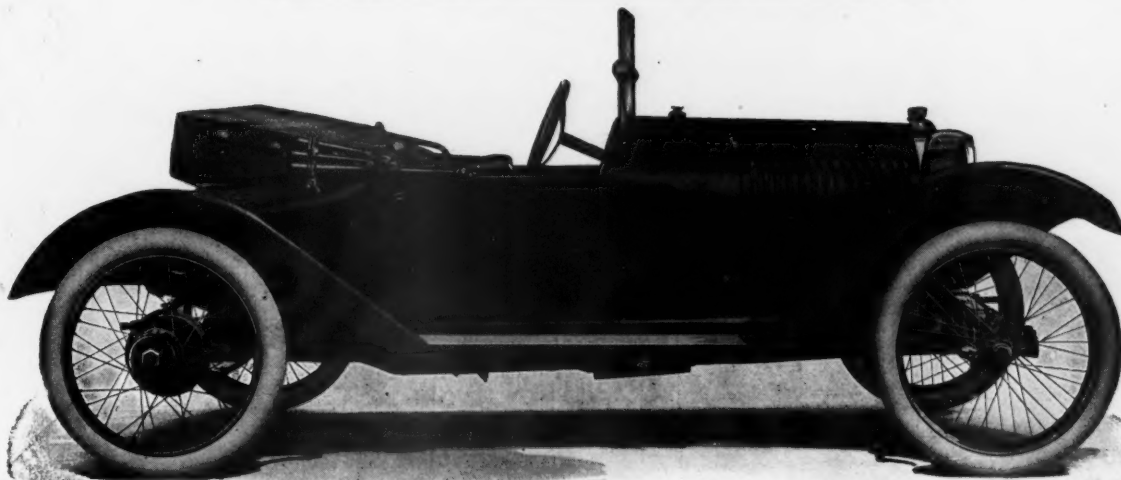


Splitdorf Electrical Co.
NEWARK, N. J.

(All SPLITDORF features are fully covered by patent or patents pending)

Cornelian Light Car

BLOOD BROS. MACHINE CO., ALLEGAN, MICH.



A \$410 STAR THE BRILLIANCY OF WHICH
WILL SHINE ON FOREVER

The Speediest Light Car
in the world

The Easiest Riding Light Car
in the world

The Least Upkeep of any
car in the world

The Easiest Control of any
car in the world

The Greatest Cross Country
Car in the world

The most power per weight
of any car in the world

TOP AND
WINDSHIELD
\$25 EXTRA



Can you wonder, then, at the tremendous and immediate popularity of the Cornelian, especially when you consider also the classy lines and most durable and beautiful baked enamel finish of this peppery little flyer?

Blood Bros. Machine Company, Allegan, Mich.



Fast-Traveling High Call of the Sparton

is readily recognized in the Model "F" now sold at all dealers' at the new price of \$4.00. Can be attached in ten minutes to any car. Has the true, reliable, decisive Sparton voice.

Is the largest hand horn on the market. The efficiency of the Sparton factory, the most extensive in America, makes possible the finest workmanship at a reasonable price. That is why the

SPARTON SAFETY SIGNAL

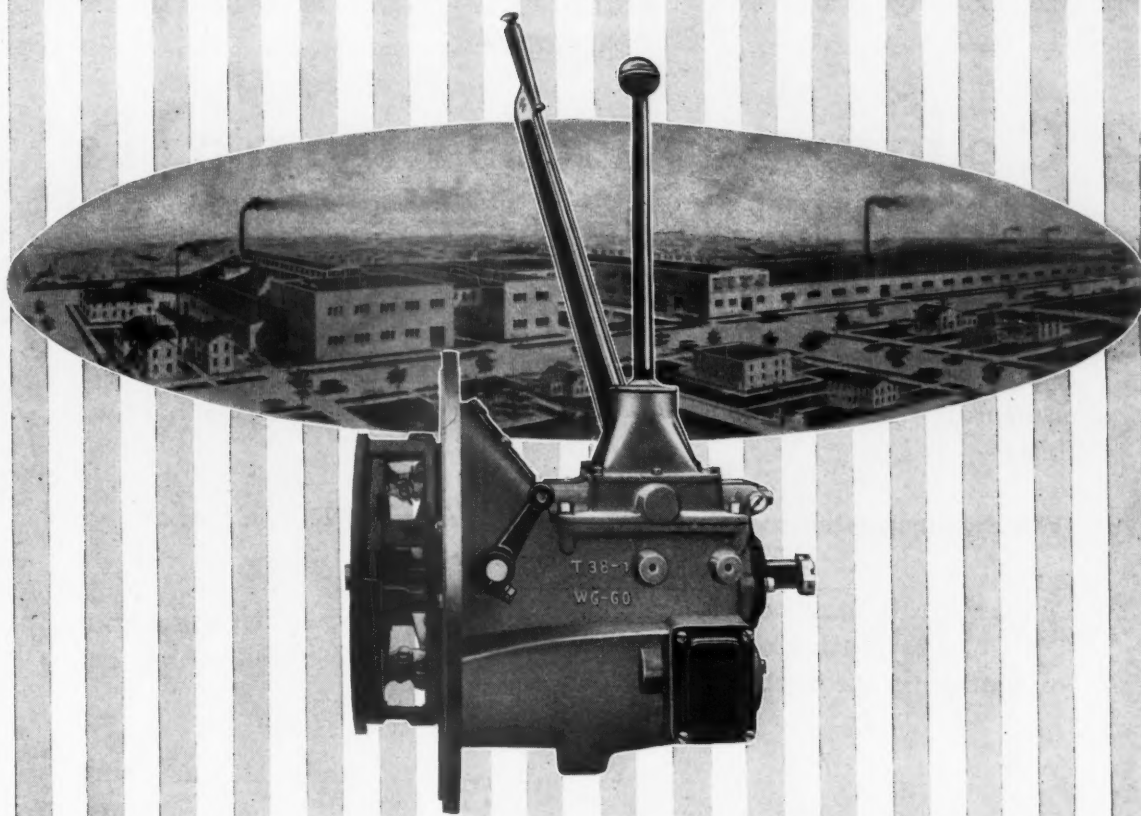
Model "F" is the first and finest to be sold at \$4.00. Finished in satin black and nickel or all black.

Manufactured with true Sparton care. The diaphragm of every Sparton Horn is carefully hand hammered by a skilled workman until it has the right vibration to carry the clear, strong Sparton note. It has the far-reaching call for country roads—the quick, sharp cry for city traffic.

Model "F" Sparton is now on sale at all dealers' at the new price of \$4.00.

The Sparks-Withington Co.
Jackson, Michigan





The Factory Behind Warner Gear Co. Products

When a Warner assembly, whether Transmission, Differential, Steering Gear or Clutch, leaves the factory it goes out with every possible assurance of success and long life. From its conception on the drawing board, thru the various operations in the shop, under the innumerable inspections for quality of material and accuracy of workmanship, each unit receives the closest attention.

Back of each part of every assembly, making possible, and insisting upon maintaining the very highest quality obtainable, is a big, highly efficient organization—specialists—unlimited financial resources and a complete modern shop equipment.

Such is the organization which has built Warner Gear Company reputation. The thought and care put upon every Warner Gear Company product is reflected in the perfect service it gives. Such is the service which should be built into your car. If you use inferior products you invite disaster. We will gladly consult with you upon your requirements upon receipt of word from you.

Are you building Warner Quality into your car?

Warner Gear Co.,

Muncie, Indiana

DETROIT OFFICE, 967 WOODWARD AVE.



MARMON
"The Easiest Riding Car in the World"

Come to Indianapolis 500 Mile Race Day—May 29 MARMON DAY—May 28

Business men who sell automob-
iles—

Who want greater profit—

Who want to know how Marmon
"41" has revolutionized the idea
of motoring accomplishment—

Who want to know why—

Marmon "41" has set new stand-
ards of motor performance—

Who realize that a difference in
manufacture—

Is responsible for a difference in
performance—

Are invited now—for Friday,
May 28th—

The day before the big race—

To Indianapolis—

To Nordyke & Marmon Com-
pany's factory—

Where we PROVE what we
make—

Where we PROVE what we
claim—

Where every detail of the manu-
facture of this extraordinary car
will be shown—

Where every detail of the selling
plan and profits will be ex-
plained—

This is really a BIG OPPOR-
TUNITY—

The details await you—

Will you ask us for them?

Come a day early to the race—

Get the Marmon idea right from
the start, from its origin—

Remember — Friday — May
28th—

MARMON DAY.

NORDYKE & MARMON COMPANY

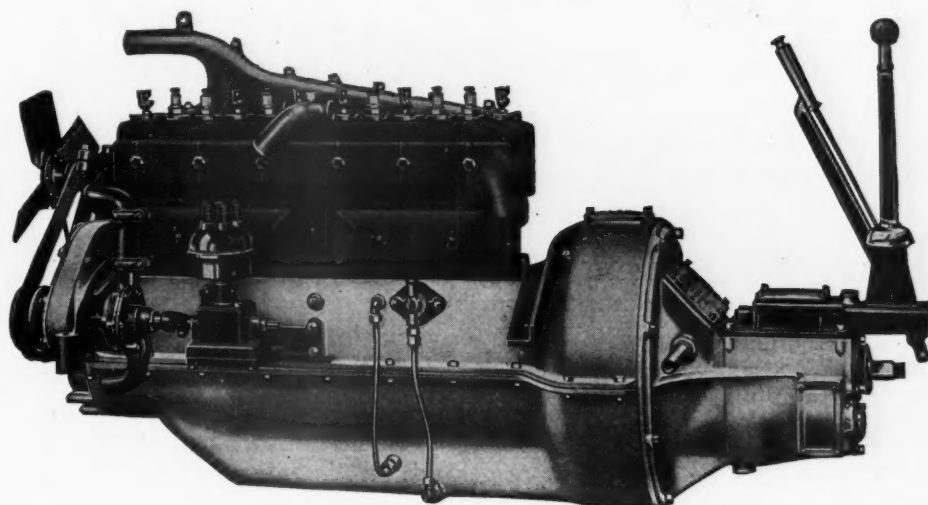
Indianapolis

(Established 1851)

Indiana

Supremacy

The cam shaft—being completely submerged in oil—entirely eliminates all tappet noise.



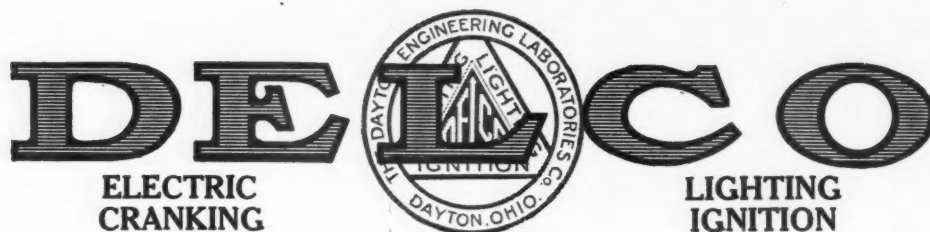
This is only one of the features that make
SUPREME the 45 H. P., 350 Pound
3" x 5" Six Cylinder

MODEL MOTOR

It will be to your advantage to get in touch with us promptly

**PITTSBURGH MODEL ENGINE COMPANY
PITTSBURGH, PA.**

Factories—PITTSBURGH, PA., and PERU, IND.



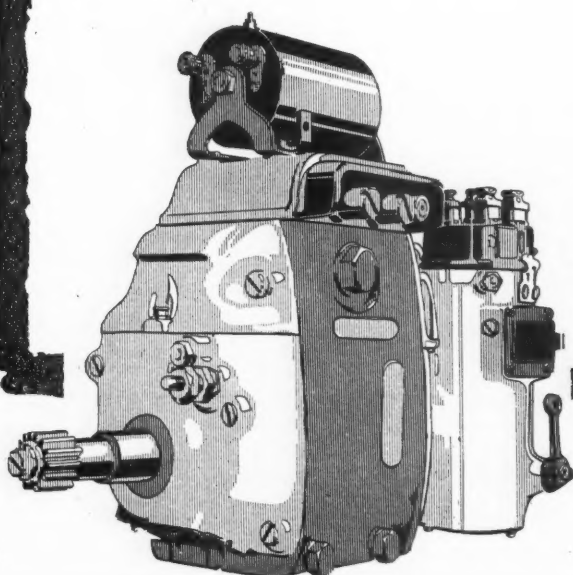
How often do you change your spark?

Do you change your spark every time you slow down to turn a corner?

Do you change your spark every time you step on the accelerator for a slight burst of speed?

Or do you just practically forget your spark excepting when your engine commences to knock?

Do you realize what spark regulation means in the development of power?



The average driver changes his spark when he has to do so to prevent knocking.

And yet, in order to secure maximum engine performance, the spark must be changed with every variation of engine speed.

Only the most expert drivers can do this accurately, by hand.

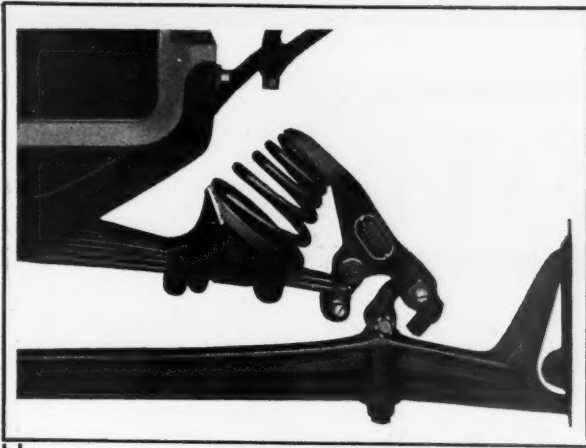
Delco automatic spark control, which is simply one feature of Delco ignition, does it automatically—and with absolute accuracy under all operating conditions.

The driver of a Delco equipped car forgets his spark lever and yet is always sure of a perfectly timed spark.

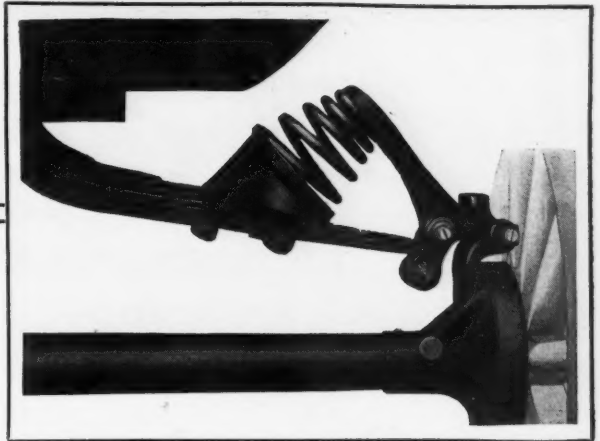
That is why Delco Equipped Cars are invariably economical in operation and unusually efficient in the development of power.

There are 240,000 cars now in operation equipped with Delco cranking, lighting and ignition.

The Dayton Engineering
Laboratories Co.
Dayton, Ohio



**Front
and
Rear**



HASSLER Shock Absorbers for FORD Cars

The unique lever construction holds down the leaf spring and prevents upthrow. This is an **EXCLUSIVE PATENTED** feature.

The special large spiral springs do not support the direct weight of the car. Working in combination with the regular leaf springs this lever construction gives absolute comfort. Whipping about, "tossing" and "side sways" are eliminated. Saves tires, and protects the motor from jolts and jars.

No description of its operation and mechanical excellence can convey the amount of added riding comfort they give to your car.

Easy Steering—Safe Driving— No Rebound—No Tossing

Four great reasons for Hassler superiority. More than 20,000 private owners testify to this superiority. Hundreds of commercial car users, after comparative tests, are using from five to fifty sets.

Easily Applied

Any mechanic can apply easily. When once applied there is no further trouble. Nothing to get out of adjustment—nothing to wear out.

Liberal Guarantee

Hassler Shock Absorbers are sold under a strong, liberal guarantee. If after 10 days' test you are willing to part with your set, your money back without argument. Write today for illustrated folder and complete details.

Dealers

We are offering an attractive trial proposition to dealers.

Write factory or nearest distributor. Not sold through jobbers.

\$20 for a Set of **FOUR**

ROBERT H. HASSLER, Inc. **Indianapolis, Indiana**

DISTRIBUTORS

Erwin Greer Automobile Co., Chicago, Ill.
Hassler Sales Co., Newark, N. J.
J. F. Charley Auto Co., Evansville, Ind.
Fordowners Supply Co., Louisville, Ky.
Eckel Tire & Rubber Co., Columbus, Ohio.
Kirkham & Johnson, Superior, Wis.
Edward McClintock, Minneapolis, Minn.
Moscow Auto & Supply Co., Moscow, Ida.

Hebert & Arnot, San Francisco, Cal.
Arkansas Valley Auto Co., Pueblo, Colo.
Procter Brevard, Weatherford, Texas.
Edward Heathman, Dayton, Ohio.
C. R. Hamilton, Lakeland, Fla.
Pinkerton Motor Co., Peoria, Ill.
Winn & Huss, Yuma, Ariz.
Geo. E. Curtis, Denver, Colo.

L. M. Cotton, Inc., Boston, Mass.
S. T. Candler, Los Angeles, Cal.
J. A. Moore, San Diego, Cal.
C. A. Kuhr, Cincinnati, Ohio.
A. H. Blath, Salt Lake City, Utah.
Kachler Motor Co., Richmond, Va.
E. T. Fowler, Springfield, Ill.
Stout & Dils, Parkersburg, W. Va.

DISCO

ELECTRIC
SYSTEM

Single Unit

WITH
WARD LEONARD
CONTROL

Starting and Lighting For Ford Cars

WITH
WARD LEONARD
CONTROL

The DISCO Electric Starting and Lighting System starts the motor of your Ford, and without any change, becomes a generator that charges the storage batteries. DISCO requires least power to operate and is simplest to install. Made to fit your Ford.

Simple in Operation

DISCO single unit system offers utmost simplicity compared with two unit systems. DISCO eliminates gears and over-running clutches. Motor-generator is identical with the generator used in two unit systems.

DISCO has more than sufficient power to spin the motor, and at the same time leave it free to operate as a generator. This eliminates hundreds of working parts and greatly reduces the weight.

Exclusive Feature

Notwithstanding the fact that the Disco motor generator is the lightest Ford starter on the market, specially designed Disco Yoke bracket (patented), which, besides giving the necessary additional support to the engine, acts as a bracket on which motor generator is mounted, and at all times and under all conditions guarantees perfect alignment and one hundred per cent efficiency.

Sets a Standard for Ford Car Starting and Lighting

It spins the motor and carries current to all five lamps. A dependable, clear light, all the time, is the result.

Specifications

Motor-generator, controller, starting switch, patent bracket, silent chain, 2 sprockets, battery and box, lighting switch, wire, terminals attached, and dimmer; necessary screws and bolts.

*Send for free booklet
on Ford Starters*

Dealers—Get acquainted with DISCO profits. They are large. Write

Complete, F.O.B. Detroit

\$75

DISCO ELECTRIC STARTER CO.
DETROIT, MICHIGAN



Simple Installation

DISCO Electric System can be readily installed in any garage or machine shop, or at home by owner understanding proper handling of tools.

One silent chain, and 2 sprockets are used. DISCO takes less energy from the battery. Cranks faster. Starts sooner. Gives your battery more and longer life, taking less power from your motor.



Firestone

Means Co-operation

THERE is a powerful dollars-and-cents Force back of the co-operation you get from the Firestone Organization. Send today for information on our various kinds of Dealers' Helps. See how much we do to relieve you of selling anxieties.

Find out where you can balance your advertising better—where you can save money in one place to spend more profitably in another. Find out about the Firestone Inserts for dealers—"eye-catchers" which catch profits for you.

Firestone

Business Boosters

Have you seen our de luxe catalogs? Our impressive stationery? How about some Firestone Signs—handsome ornaments and fine business-getters: free! How about a Movie Slide? Splendid advertising at low cost.

Firestone Catchy Displays Will Help Make the Window Pay the Rent

Tube Bags—to you at half actual cost. Sales Letters, stickers—a multitude of expert advertising and selling helps.

Fill out the coupon today. Get in touch with the Firestone Co-operative methods, now.

Firestone Tire and Rubber Company
"America's Largest Exclusive Tire and Rim Makers"
 Akron, Ohio—Branches and Dealers Everywhere



Free Sales Service Coupon

Firestone Tire & Rubber Company, Akron, Ohio

Gentlemen:—Your Co-operation looks good to me. Let's hear more about it. There is no obligation to me whatever.

Name

Address

City

State

DORT

The DORT Vibrationless Motor

You can place a goblet, brimful of water, on the top of a running DORT motor, and leave it there without spilling a drop—

\$680

Touring Car

Because the DORT motor operates without vibration—absolutely.



It's DORT'S own design, adapted from famous French patterns.

A high-speed motor, unit power plant, with aluminum crank case and bell housing.

**Runabout
\$495**

The extra heavy crank shaft ($1\frac{3}{4}$ inch), with large throws, eliminates any deflection. So the motor cannot vibrate. The light connecting rods and pistons balance to within $\frac{1}{4}$ of an ounce.

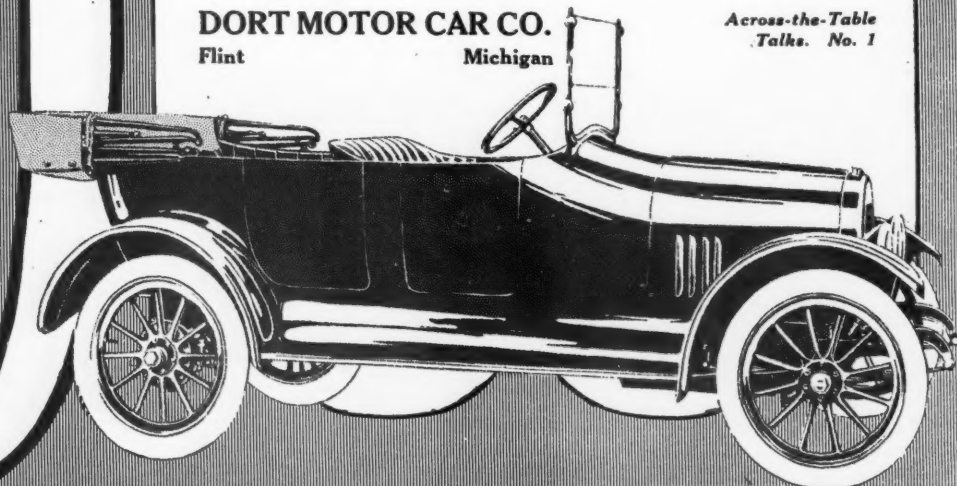
**Electric Starter,
Either Model,
\$45 Extra**

The DORT motor is perfectly balanced—of highest efficiency—

Vibrationless, cool running, of remarkable **simplicity, accessibility and durability.**

DORT MOTOR CAR CO.
Flint Michigan

*Across-the-Table
Talks. No. 1*



Trade-mark



Registered, U. S. Pat. Off.

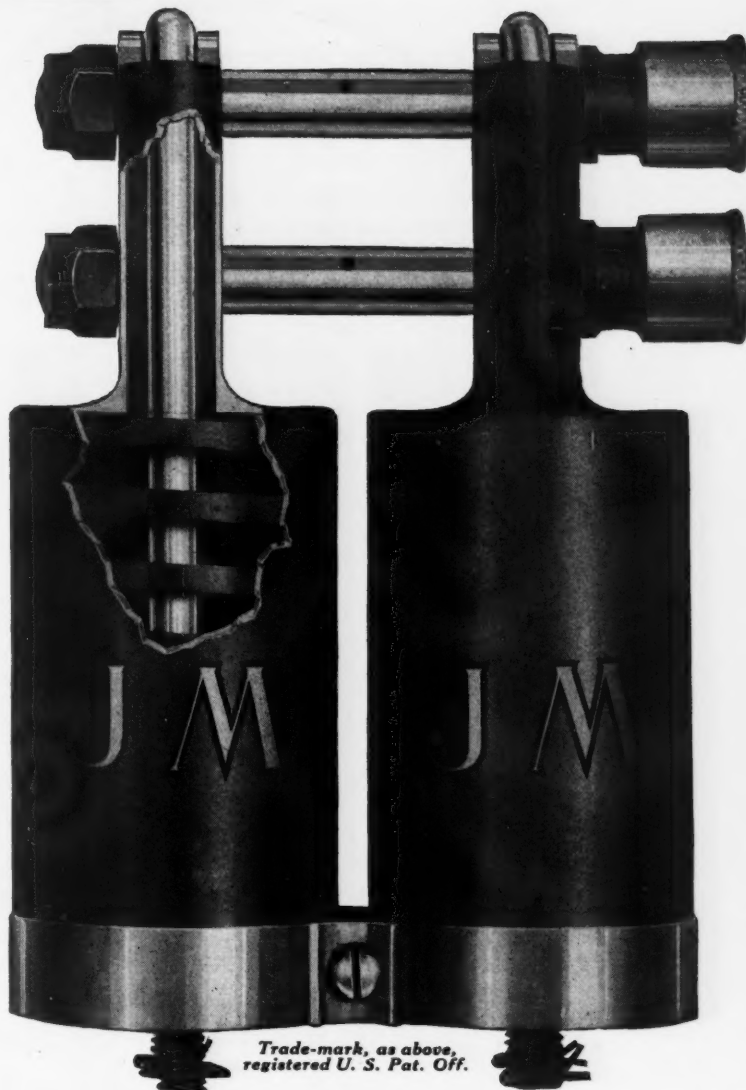
Perfect comfort at 4c a day or less!

Luxurious comfort for owners of Overland, Buick, Hupmobile or any other cars of less than 3000 pounds.

Cannot cost over four cents a day—saves many times its cost on tires and engine repairs.

The same application of the helical spring principle which has made the J. M. Shock Absorber the standard on finest cars the world over. With such added improvements as Non-Gran Bushing, which takes up all the wear; grease cups, practical air chamber, etc.

Write for our new Leaflet "M", illustrating and fully describing this new



Trade-mark, as above,
registered U. S. Pat. Off.

Type Z², J. M. Shock Absorber

guaranteed for two years' service

The right absorber, at the right price \$30—and the right trade proposition.

THE J. M. SHOCK ABSORBER CO., Inc.

Main Office and American Factory: 210 South 17th Street, Philadelphia

FACTORY BRANCH: 250 West 54th St., New York

BRANCHES in every leading city. Look up "J. M. Shock Absorbers" in your telephone book. Do not confuse with any other concern of similar name.

Branches in every Civilized Country.

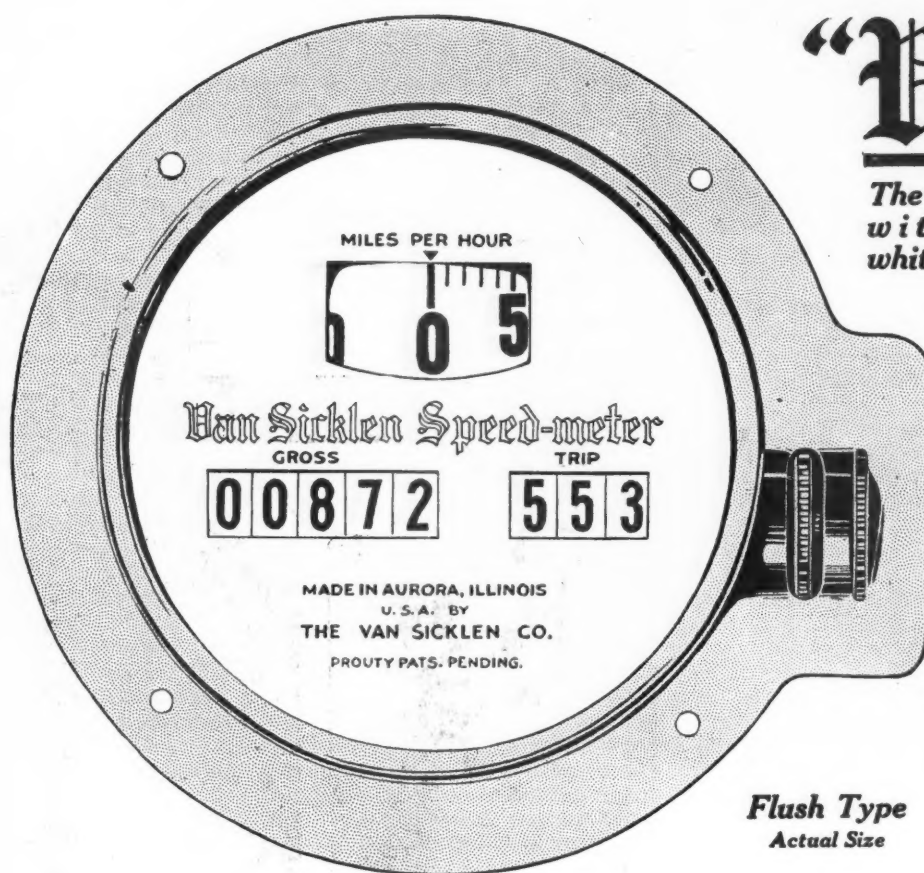
CANADIAN DISTRIBUTORS: Canadian Fairbanks-Morse Co.

Distributors of Cored Bars of



Get the famous 6-54 assortment

When Writing to Advertisers, Please Mention Motor Age



"Van"

*The speed-meter
with the big
white face . . .*

STANDARD EQUIPMENT

ON

Apperson
Pilot
Chevrolet
Monroe
King
Hercules
Jeffery

*Flush Type
Actual Size*

JEFFERY—modern in mechanical structure, unexcelled in quality, and distinctive in up-to-the-minute style and beauty—has chosen Van as standard equipment.

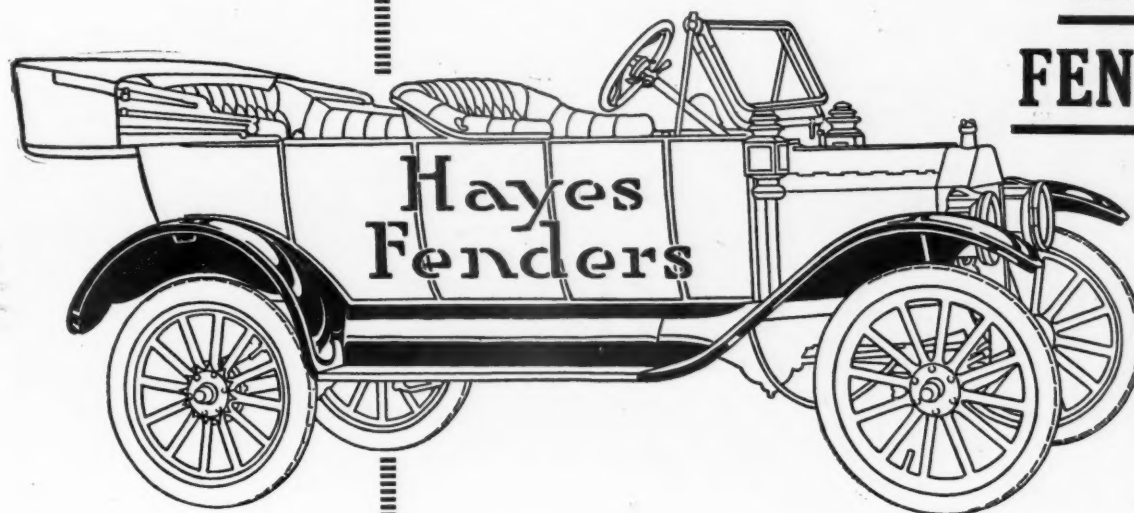
Van's quite a youngster, but despite his youth is already conceded by engineers to be one of the biggest forward steps recently taken in the motor car industry.

THE VAN SICKLEN COMPANY
AURORA ILLINOIS

Factory Representatives: Cutting, Armstrong & Smith Sales Co., Detroit, Mich.

General Distributors: The Beckley-Ralston Company, Chicago

More than 100 Ford owners every day
are equipping their cars with **HAYES**
CROWN
FENDERS



Made by the
Pioneer Metal
Fender
Manufacturers

Look what a difference these artistic fenders make in the appearance of the car. Real style there! One enthusiast writes, "I wouldn't be without a set for \$50." He reckons they are worth more than three times the small price he paid for them. So will you.

Owners appreciate the superior looks, weight and material of Hayes Crown Fenders. They can't vibrate or drum. They keep out the mud. They go on easily, with same running boards and shields, and without re-forming fender irons. And they certainly are handsome!

We made the first metal Fenders put on a car in this country. We know the business and are today the largest makers of fenders in the world. Dealers appreciate the fact that we can make unlimited deliveries and that one order means many repeats. Last month we shipped over 2,000 sets of Hayes Crown Fenders for Ford cars.

You will probably find a set waiting at your dealer's. If not, we will ship instantly on receipt of letter or wire. *You don't have to wait to get Hayes Crown Fenders.*

Price—\$14.00—enameled—per set of four—crated—f. o. b. Detroit. Send us cash, or order through your dealer.

HAYES MFG. COMPANY

485 Maybury Grand Avenue
DETROIT, MICH.

**15,000 New Cars
To Be Bought
In Indiana
This Year**

THE INDIANAPOLIS STAR.

NO. 342.

MONDAY, MAY 17, 1915

Printed More Automobile Advertising In 1914 Than
Any Other Newspaper In The State

\$1,000

**Automobiles
in Indiana**

—is the conservative estimate placed on the
1915 registration, by competent statisticians.
And to this army of automobile owners there will be
sold more than—

\$4300,000 Worth of Accessories

It's right in Indiana—where tens of thousands of automobiles, and millions of dollars worth of accessories are going to be bought—that you should advertise, to get sales.

THE STAR LEAGUE Covers the Entire State of Indiana

In combination with the Muncie Star and the Terre Haute Star, the INDIANAPOLIS STAR covers the entire state of Indiana.

These 3 publications blanket the morning newspaper readers of Indiana—and the morning newspaper class in Indiana are largely wealthy business and professional men—the automobile buyers of the state.

A combination rate of 15 cents per agate line will place your advertisement, for results, in all 3 of these morning papers—the All-Star League.

The Indianapolis Star printed more automobile advertising in 1914 than any other newspaper in the State of Indiana.

The Figures for 1914:

Indianapolis Star, 380,779 lines. Second Indianapolis Paper, 271,549 lines. Third Indianapolis Paper, 92,855 lines.

Indiana is going to buy automobiles. And it's going to buy accessories.

IS INDIANA GOING TO BUY THEM FROM YOU?

The Best Automobile Advertising Medium in the State

Western Representative,
JOHN GLASS
Peoples Gas Bldg., Chicago

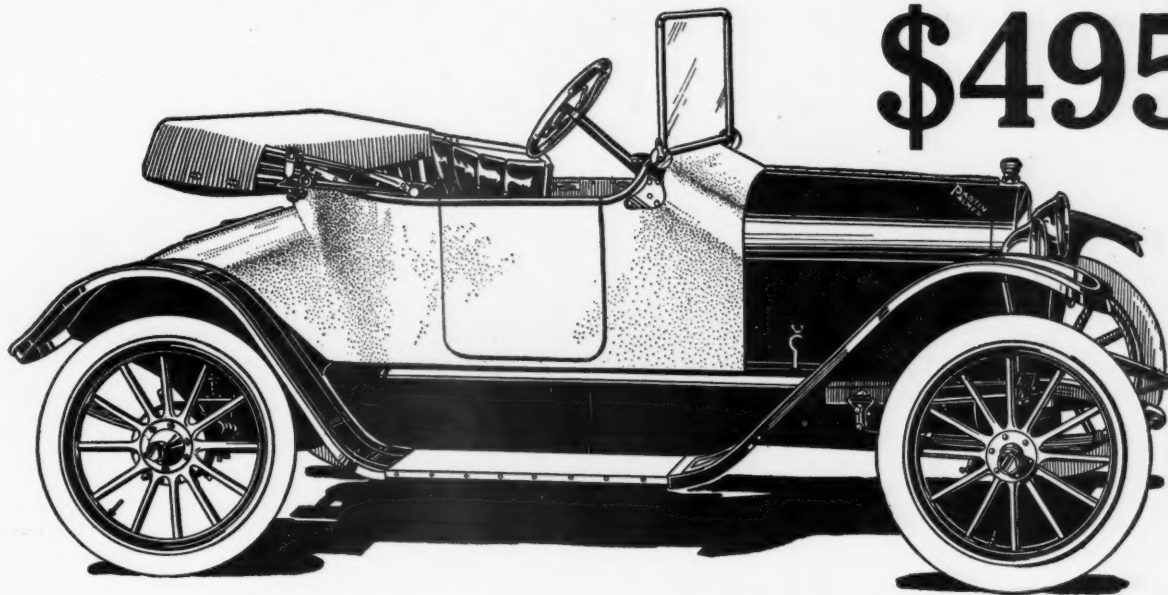
Eastern Representative,
KELLEY-SMITH CO.
220 Fifth Avenue, New York

MEMBERS AUDIT BUREAU OF CIRCULATION

When Writing to Advertisers, Please Mention Motor Age

PARTIN-PALMER MODEL 20 Roadster

\$495



This First Real Car for Little Money Achieves Wonderful Success All Over the World

What You Get in the Partin-Palmer Model 20 Roadster

Motor—4-cylinder, en-bloc, develops 22 H. P.

Lubrication—Constant level splash with mechanical pump.

Ignition—Connecticut Distributor, with generator and storage battery.

Cooling—Thermo-Syphon. Honey-comb radiator, oversize manifolds.

Axles—Full floating rear. "I" beam front.

Steering Gear—Irreversible worm and gear.

Drive—Torque tube enclosing drive shaft.

Wheelbase—96 inches.

Tread—56 inches.

Transmission—selective operating, three speeds forward and one reverse.

Control—Left drive, center control. All brakes foot operated.

Equipment—Generator system of electric lighting, silk mohair top and side curtains, electric horn, adjustable windshield, tools, pump and tire repair kit. Electric self starter \$75.00 extra.

Over 20,000 automobile dealers telegraphed or wrote for territory when the Partin-Palmer model 20 was announced a year ago at the record marking price of \$495.

In the short space of twelve months the Partin-Palmer Model 20 has been delivered to all parts of the world. Owners in Australia, Java, New Zealand, South Africa and all over Europe are using the Partin-Palmer with the same enjoyment and satisfaction that is being felt by the owners of this remarkable full sized small car in this country.

Owners of big cars have added the Partin-Palmer Model 20 to their garage and use it every day for business trips and short runs.

Other owners who are buying their first car have selected the Partin-Palmer Model 20 and have found that they need go no further to get all the pleasure, comfort, satisfaction and pride that a well built automobile can afford them.

The new Partin-Palmer factory at Rochelle, Ill. (near Chicago), is running double time to take care of orders which are pouring in from all over the world.

Such specifications as are found in the Partin-Palmer Roadster Model 20, such careful workmanship and high grade design are not found in any other cars selling at less than \$1,000.

The Partin-Palmer, Model 38 6-passenger touring car at \$975 is achieving the same success in the field of larger cars at low price that has made the Partin-Palmer Roadster the big success among light full size motor cars.

Special Dealer Proposition

Dealers write today for a copy of "The Proof" and ask for our special dealer's proposition in unoccupied territory.

Commonwealth Motors Company

Suite 419, 326 W. Madison Street

Chicago, Illinois

DODGE BROTHERS MOTOR CAR

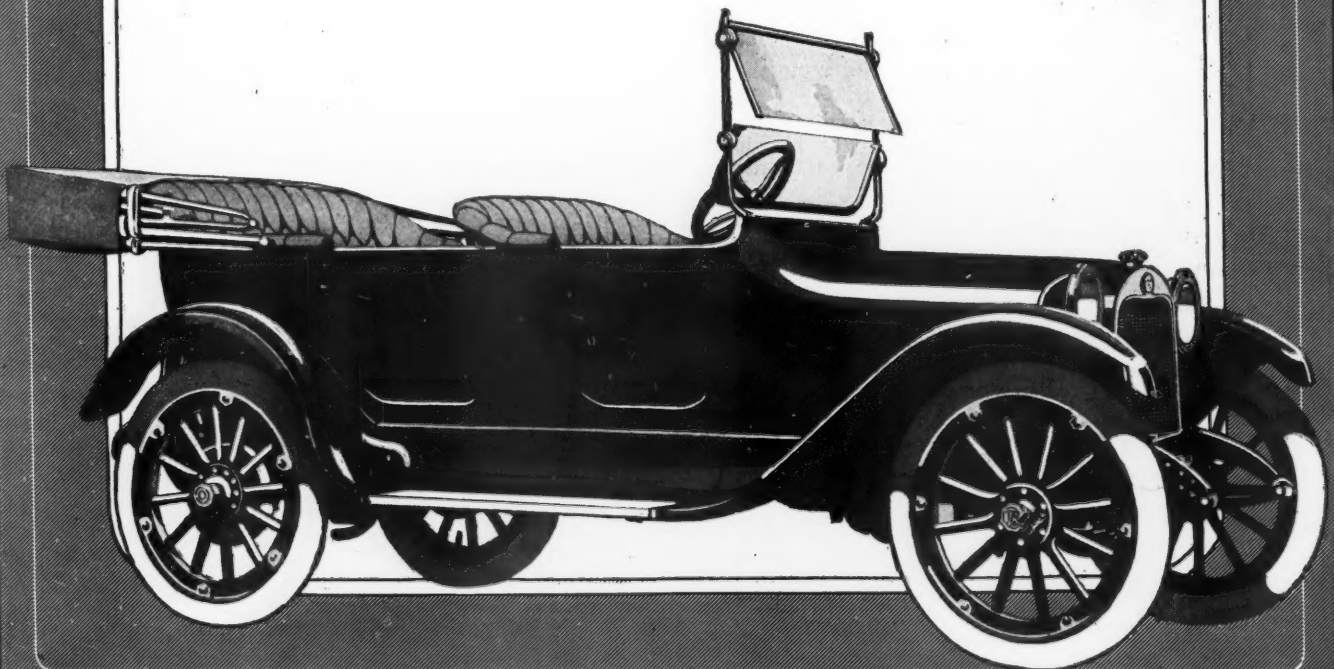
The owner's pride in this car is abundantly justified by the grace and symmetry of its lines.

The body, finished in ebony black, with its pure streamline from tonneau to radiator—the oval moulded fenders—the graceful cowl and shapely hood—the enameled instrument board, completely equipped with gauges, starting and lighting switches, speedometer, etc.—are all distinctive features.

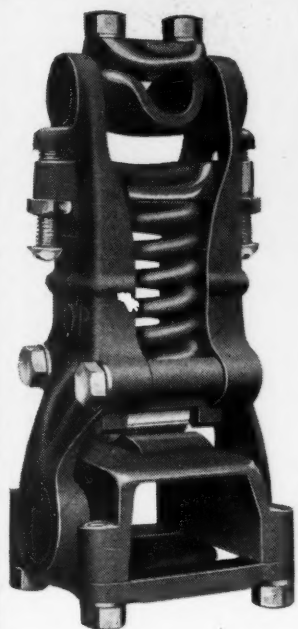
The motor is 30-35 horsepower
The price of the car complete is \$785
(f. o. b. Detroit)

Canadian price \$1100 (add freight from Detroit)

DODGE BROTHERS, DETROIT



When Writing to Advertisers, Please Mention Motor Age



For
Your
FORD \$ **4.90**

Savidge Steering Device

Sturdy

Simple

Safe

Silent

Will add \$100 to the value of your Ford by making it better, safer and easier to drive.

Here is a simple, sturdy device, built along proven engineering lines, that takes out all the "wobble" of the front wheels, gives positive steering control, acts as a shock absorber on the steering gear, kills the rattle, makes the car hold to the road, enables you to turn corners at greater speed, and saves tire expense. It's better than an accident policy—because it protects your person as well as your pocketbook.

The Savidge is **built especially** for the Ford. By an ingenious patented arrangement of a heavy coiled spring and accurately designed

cam-surfaces it provides the proper amount of graduated tension. This tension is adjustable and can be arranged exactly to suit your own personal requirements.

Easily Applied

The Savidge can be attached to your car in **less than 6 minutes** by means of only **6 bolts**. The only tool needed is a small wrench.

When once in place—you enjoy the same ease in steering that the largest, heaviest and longest wheel base car can give.

Order Now

You buy the Savidge Steering Device with **your satisfaction guaranteed**. You run no risk.

Write us today or send in the coupon and learn the details of the finest and most inexpensive detail of equipment ever added to Ford cars.

Savidge Steering Device Company
502 Murphy Building, Indianapolis, Ind.

DEALERS

Here is a live proposition backed by men who know the Ford accessory business. Get in on these profits now! There's a good margin for you. We protect you. Write for details.

Savidge Steering Device Co.,
502 Murphy Bldg., Indianapolis.

Gentlemen:—

Please send me complete information regarding Savidge Steering Device.

☐ Dealer

☐ Owner

When Writing to Advertisers, Please Mention Motor Age

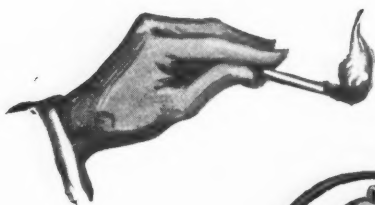


The ever-present spark

of static electricity that all human beings possess and are able to throw off when the temperature is right, is the cause of many fires and explosions.

Gasoline evaporates and a spark of electricity ignites gasoline vapor. This is the true origin of many of the fires that cause people to wonder how it happened.

McNutt Non-Explosive Gasoline Cans and Safety Devices are so constructed as to effectively stop the evaporation of gasoline.



MCNUTT NON-EXPLOSIVE GASOLINE CANS

You may apply a lighted match to a McNutt Can filled or partly filled with gasoline. The gas will burn but there is no danger of an explosion.

A very small investment is necessary to equip your garage or automobile or motor boat with McNutt Safety Devices. The saving in gasoline, evaporated in ordinary cans but saved



with this device, more than pays for the equipment and you protect your life and property and the lives and property of others.

Don't hesitate in a matter of this nature, for the danger is **always** present and delay is sometimes fatal.

Write at once for our literature.

John C. Eames, Inc.
320 Broadway, New York

Ask your nearest Dealer
or Write us Direct

\$275

**Electric
Vibrator**

\$500

**Electric
Motor**



**Same Horn
Under hood**

\$250

**Same Horn
Under hood**

\$475

The Adams-Bagnall Electric Co.
▼▼ Cleveland, Ohio ▼▼

Abbott 8 Detroit

Here is a car for the dealer who appreciates and can sell real quality.

We can only accommodate about 25 more dealer connections this season—and they must be good ones.

The Abbott Detroit is a car of distinction and character.

It appeals to the highest type of automobile buyer.

Its reputation and standing make it a particularly attractive proposition to representative dealers.

The New Eight is one of the sensation cars of this season. The very highest type of automobile engineering has gone into it. Money and brains have not been spared at any point to make it a car of superior quality.

The specially designed Hershell-Spillman engine with its watch like construction is remarkable for its sturdiness, its power and its flexibility.

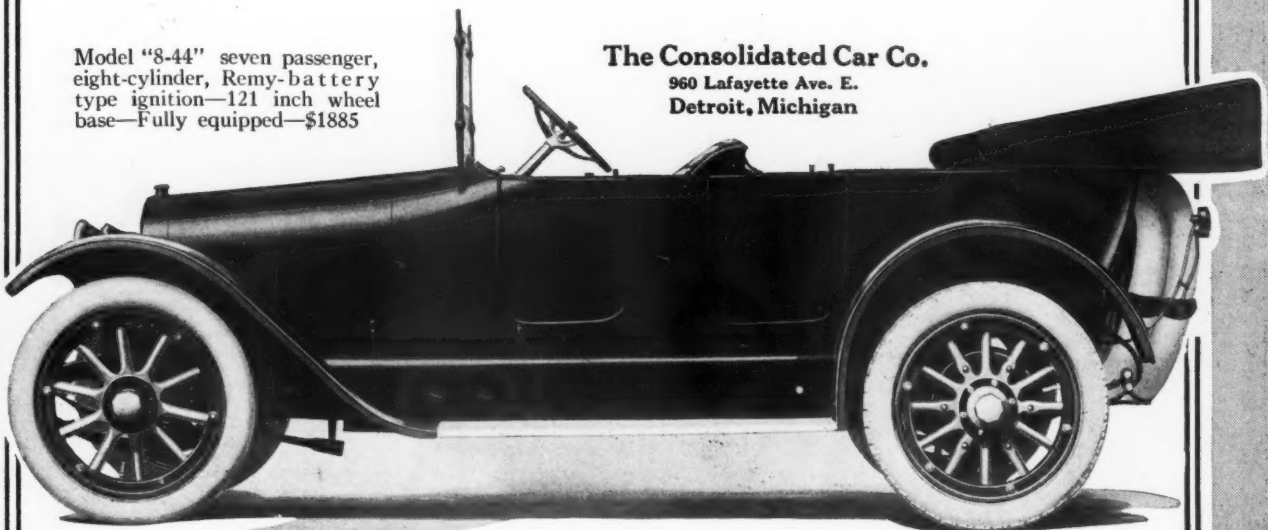
And every detail of design and finish is in keeping with the price class to which the car belongs.

*If you are interested in a really
high class dealer proposition—Write*

Model "8-44" seven passenger,
eight-cylinder, Remy-battery
type ignition—121 inch wheel
base—Fully equipped—\$1885

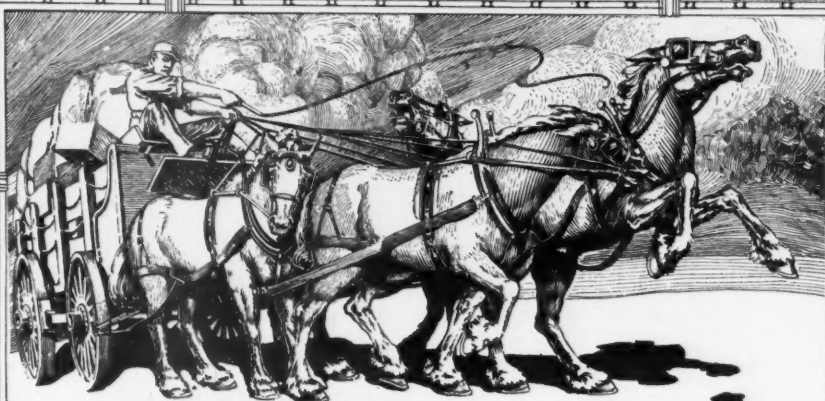
The Consolidated Car Co.

960 Lafayette Ave. E.
Detroit, Michigan



The Literary Digest for April 24, 1915

973



FORD Owners: Have YOU? This Kind of Power?

THIS is how your Ford acts with a poor ignition system. Each horse represents a cylinder of your engine, the wagon your car. Instead of pulling equally, as they should, one horse is jerking ahead, another to the side, one backing and the other plunging in the air. The truck is getting nowhere. It is being wrenched and racked. It is a true example of EXPENSIVE INEFFICIENCY.

Poorly designed multi-unit coil ignition systems make your engine pull like these four balky horses; one cylinder pulls powerfully, another barely moves down on its power stroke; each cylinder works against the others. There are vibration, uneven power and overheating. The engine and car soon become racked and ruined.

THE BOSCH MAGNETO The Modern Ignition System

cures all this, for it serves the Ford as well as it serves the scores of high grade cars on which it is standard. It gives power and snap to the engine because its arc-like sparks ignite ALL the gas in the cylinders and occur in exact relation to each other. It produces even running, the utmost efficiency and a smile of satisfaction. It's like the powerful team pulling together—IT'S A REAL NECESSITY.

You save yourself all ignition worry, you get a better car, you're satisfied when you fit your Ford with a Bosch Magneto. A simple attachment makes it easy.

Write for "The Key to Ford Efficiency" and get an inkling how to make your Ford a better car.

Bosch Magneto Co., 214 West 46th St., New York
Chicago Detroit Toronto San Francisco

Bosch Attachments made also for all battery ignited cars.

To The Trade

The above "ad" has had over four million circulation in the Big Weeklies during May. Thousands and thousands of FORD Owners have become interested in the Bosch Magneto because of this appeal. The point is this—**ARE YOU READY** to meet the demand that is being created—you should be, it's really worth while. If you haven't already received it, write for the Bosch Trade Bulletin—R D 63—it tells about the Bosch-Ford Proposition. Do it NOW.

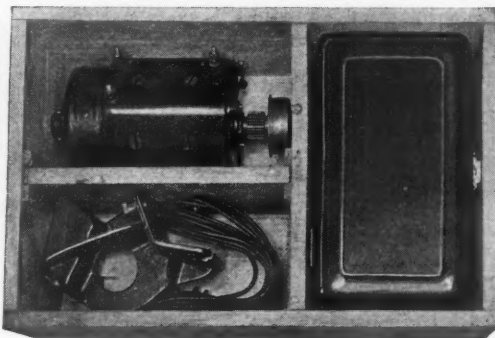
**Single
Unit**



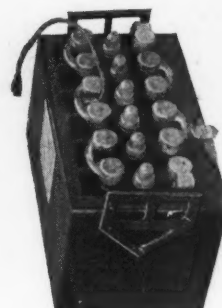
The Simplest to Install

Outfit packed neatly in box with clear instructions for installation, even to the markings of the simple wiring terminals.

Anyone can make the installation in the least possible time—some have done it in three hours.



Dyneto Ford Outfit for Shipping



Willard Battery

The Real FORD

Starting and Lighting Equipment

Especially designed, constructed and manufactured for the purpose.

Not a make-shift or after-thought to obtain your money without giving you proper value and service.

Too many outfits have been hurried on the market to meet the demand, with the result of considerable dissatisfaction and not a little reaction against the whole idea of installing an electric starting and lighting outfit on a car of this type.

Quality

The same materials, workmanship, etc., as used on the Franklin, Regal and others, who demand the best.

Simplicity

Only one switch to throw on and off. Only THREE MAIN PARTS—Dyneto Motor-Generator, Willard Storage Battery, Starting Switch.

Advantages

of a non-stalling engine:
Quick Installation
Everlasting Satisfaction

Complete Outfit

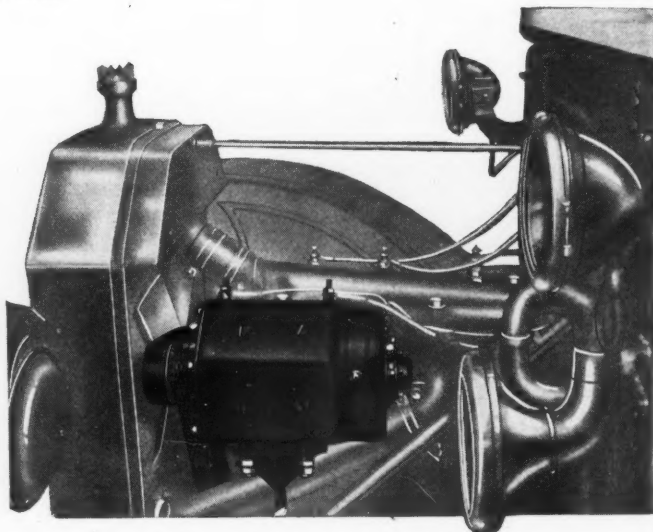
Neatly packed in box with all materials marked with instructions for installing.

\$75

If you want to save time, send \$75.00 draft. We will ship with understanding that if everything is not as desired, we will refund money on return of outfit in good condition in ten days.

Descriptive Folder on Request

DYNETO ELECTRIC COMPANY
Dept. B Syracuse, N. Y.



RAYFIELD

CARBURETORS

Acknowledged Leader

RAYFIELDS are used on more quality cars as standard equipment than any other carburetor.

Select what you believe to be the best among American cars; you'll find that Rayfields predominate there.

Rayfields are just a little higher priced; but they get out of a motor all there is in it, the last ounce of power, the swiftest acceleration. They set the carburetor standard.

Your car will do better with a Rayfield. No matter what make it is, or how many cylinders it has, try it and see what the "World's best carburetor" means.

FINDEISEN & KROPP MFG. CO.

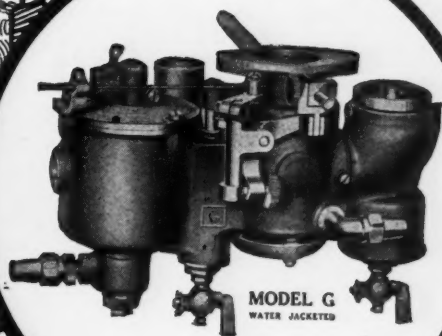
2109 Rockwell St., Chicago

BRANCHES:

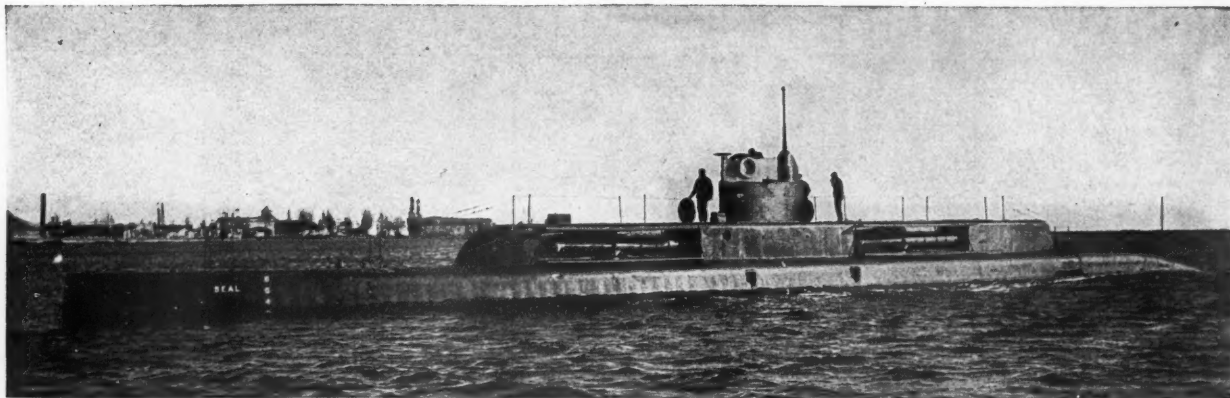
1140 Michigan Ave.
Chicago

1902 Broadway
New York

1214 Woodward Ave.
Detroit



MODEL G
WATER JACKETED



America, Great Britain, Austria, Russia and Japan use Gould Storage Batteries to drive submarine vessels in their navies!

These great nations have selected Gould Storage Batteries to further their naval superiority and protect the lives of their most daring fighters.

Gould Guaranteed Batteries for the comparatively simple duty of starting and lighting automobiles were designed by the *same brains*, are made from the *same good materials* and with the *same care* as have won world-wide favor for our larger types operating under much more exacting conditions.

Guaranteed service and our broad experience and large manufacturing facilities offer you a protection not obtainable elsewhere.

Insist upon a Gould Guaranteed Battery and you will continually thank yourself for your good judgment.



Gould Storage Battery Co.

Genl. Office 30 E 42nd St. New York

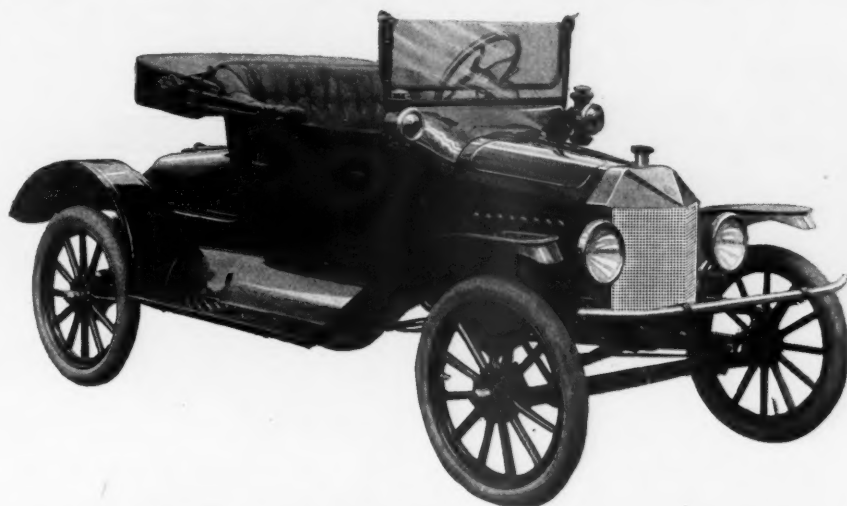
WORKS: DEPEW, NEW YORK

Boston—347 Newbury St.
Philadelphia—618 Lincoln Bldg.
Cleveland—1761-65 E. 18th St.
Detroit—Kerr Bldg. Chicago—225 E. 22d St.,
San Francisco—1448 Van Ness Avenue.
Los Angeles—118 E. Pico St.

AGENTS IN
Washington, Rochester, Buffalo, Pittsburgh, Milwaukee,
Minneapolis, St. Paul, Kansas City, Omaha, Denver, To-
peka, Seattle.

CANADIAN REPRESENTATIVE: R. E. T. Pringle,
Toronto, Montreal, Winnipeg, Vancouver.
Full stock of parts, plates and repairs carried by all of-
fices and agents. 148-A

LIVINGSTON PRODUCTS FOR FORD CARS



THE IDEAL FORD

The above picture is an actual photograph of the 1915 Cowl Dash Ford car, equipped with a Livingston pointed front radiator and a Livingston Streamline hood.

At any time—in any place—in the larger Cities—on the rural highways—Livingston equipped Fords attract favorable notice and comment.

Livingston radiators and hoods give to the Ford car a distinctive appearance—add longer lines—beauty—and individuality.

But These Are Secondary Considerations

Livingston radiators give to the Ford motor more power—more speed and longer life. They are not only ornamental, but are also economic necessities which really cool the Ford motor and insure it against overheating and its many harmful results.

Livingston products readily fit any Ford car—Livingston products are guaranteed—Livingston products are ready for immediate delivery. *May we tell you the Livingston story in full?*

Dealers—Thousands of Ford owners are purchasing these goods now—better write for our selling proposition and discounts today

LIVINGSTON RADIATOR & MFG. COMPANY

306 West 75th Street, New York, N. Y.

All types of Radiators built and repaired



Pointed Front, \$40.00
Including Extended Starting Crank.

German Silver, \$5.00 Extra
Water Capacity, 4½ Gals.
Weight, 40 Lbs.

Shipping Weight, about 80 Lbs.



Straight Front, \$35.00
German Silver, \$5.00 Extra
Water Capacity, 2¾ Gals.

Weight, 35 Lbs.

Shipping Weight, about 60 Lbs.



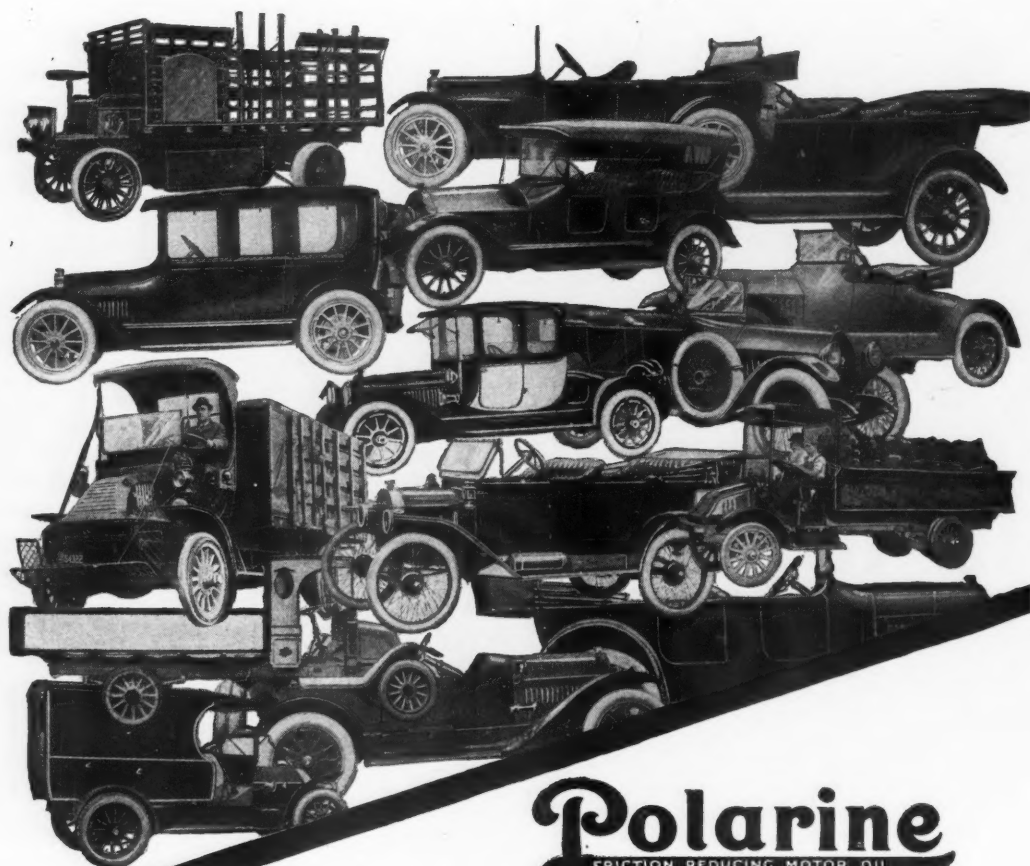
Streamline Hood, \$8.00
Weight, 14 Lbs.

Shipping Weight, 20 Lbs.
Can be shipped by parcels post.

Type No. 1—Fits all Ford cars built in 1912-13-14 and up to February, 1915, and with this hood a "hood ledge" for the dash is included.

Type No. 2—Fits the new 1915 cowl dash Ford car. This hood fits around the curved cowl dash, and a "hood lug" for the top of the curved dash is included.

BUILT UP TO A STANDARD NOT DOWN TO A PRICE



Polarine
FRICTION REDUCING MOTOR OIL

**—in any make or type of car
means *more power*—*longer life***

6,926,614 gallons of Polarine was the sales record for 1914—a gain of 1,544,764 gallons over the year before!

With this great gallonage as a basis, it is estimated that 65 per cent of all motorists in the Middle West—owning every make and type of motor car—use *Polarine*.

The great *sales increase* testifies to the *results* obtained.

Polarine maintains the correct lubricating body at any motor speed and temperature.

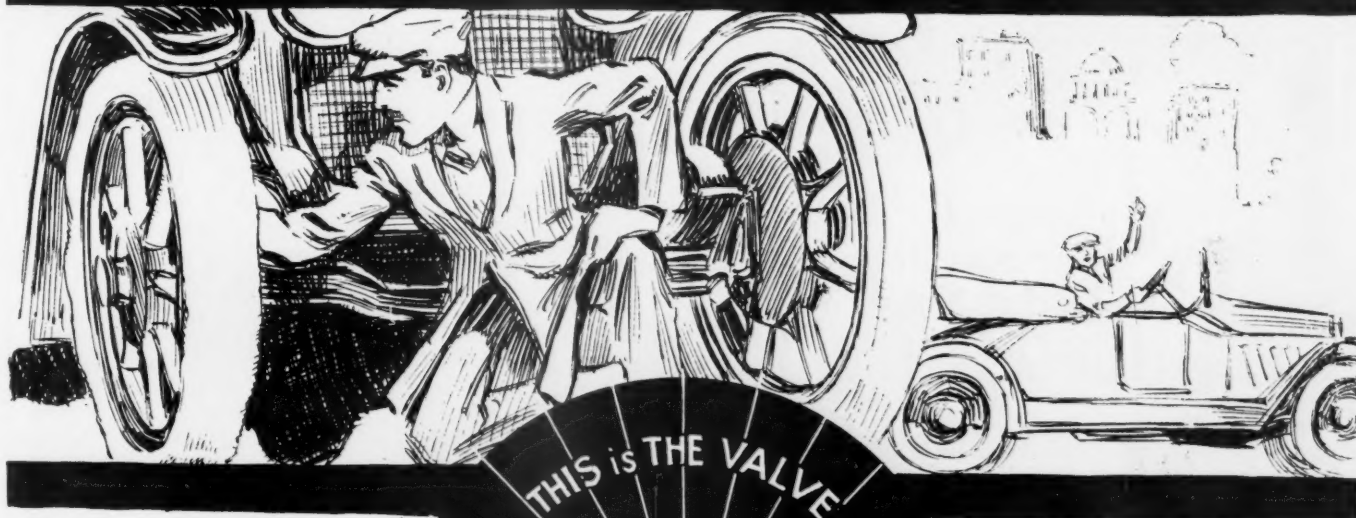
By reducing *friction* to a minimum and perfectly *protecting* every wearing part, Polarine adds to the *power* and to the *life* of every motor.

Made by the world's most expert lubricating specialists in the largest and best equipped plant of its kind.

STANDARD OIL COMPANY (AN INDIANA CORPORATION) CHICAGO, U.S.A.

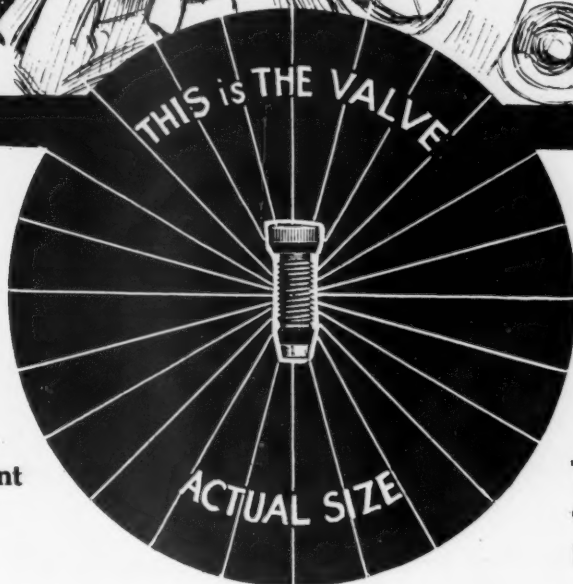
Use **RED CROWN** Gasoline also—the Companion of Polarine

(333)



The DOUBLE SEAL

The greatest improvement
ever made in tire valves.



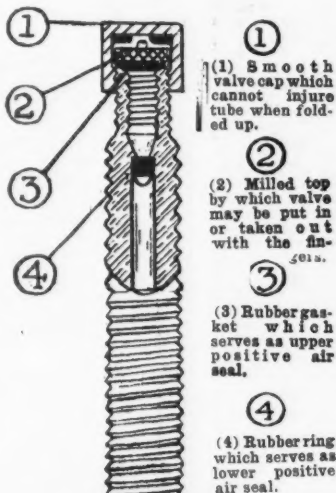
TIRE VALVE

The most remarkable device
ever designed for holding air
pressure in a tire.

"Valve trouble" is an ever-present bugbear to all users of pneumatic tires. It has been the constant irritant and has induced more profanity than punctures, cuts or blow outs.

"Valve trouble" was one of those things which had to be endured because it was conceded by almost everybody that it couldn't be cured—But the Double Seal Tire Valve has changed all this. Air now can be contained in a perfect tube for an indefinite period—air will leak through rubber before it can leak past the Double Seal Tire Valve. That's a strong statement—as true as it is strong.

Valve
5 cents



(1) Smooth valve cap which cannot injure tube when folded up.

(2) Milled top by which valve may be put in or taken out with the finger.

(3) Rubber gasket which serves as upper positive air seal.

(4) Rubber ring which serves as lower positive air seal.

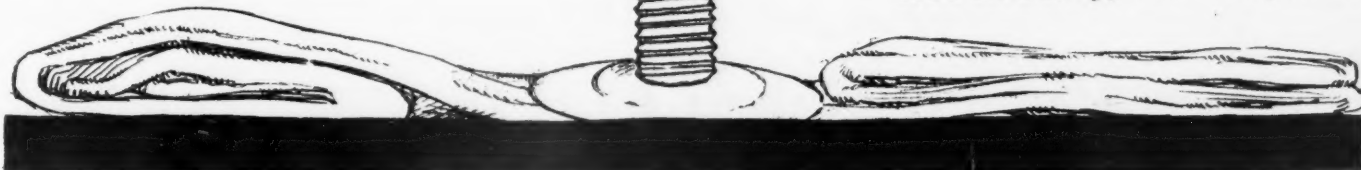
The Double Seal Tire Valve fits any valve stem; put one in each tire on your car, using only your fingers for the operation and experience the comfort which comes when you forget "Tire Trouble."

They cost only 5 cents each—They're worth several dollars apiece during the season.

At all dealers, everywhere or mailed on receipt of price.

Double Seal Tire Valve Company

1790 Broadway, New York, N. Y.



**FOR FORDS
BUICKS
MAXWELLS
and other cars**

\$20 to \$50

**Take
Your \$50 Rebate
and Bring Your Ford Up to Date**

It's just as though the Ford Motor Co. made you a present of a EUREKA Electric Lighting System. You'd accept the gift in a hurry. So put your \$50 rebate right back into your car, for the improvement it most needs. Accept the gift now—and make it a—

Eureka Electric Lighting Outfit

Self-contained and needs no adjustment. Easy to install. BALL BEARINGS THROUGHOUT. Comes ready to put right on your car. Generates more current at less expense. Has 16 years' experience built into it.

Generates a **great white light**, for convenience and safety in night driving. Permanent satisfaction guaranteed. Write for free booklet.

Dealers—Over 300,000 Ford owners get back \$50 this season. Every one is a live EUREKA prospect. And there are some 800,000 others besides. Big sales. Liberal discounts. Write for details today.

EUREKA

**Electric
"Lighting
Outfits"**

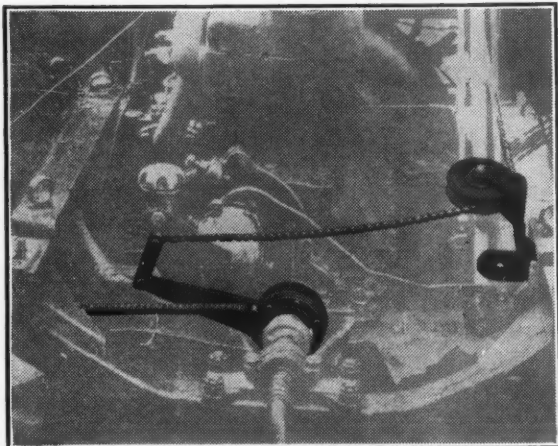
HENRICKS MAGNETO & ELECTRIC COMPANY
(FORMERLY HENRICKS NOVELTY CO.)

1523 St. Paul Street INDIANAPOLIS, INDIANA

EASTERN OFFICE: 136 Liberty St., New York



DADCO FORD STARTER



Dadco Ready for Action!

Price \$10.00

one piece—fool-proof—crank left on car—no change in car—out of sight—anybody can put it on in two hours—weighs less than 10 pounds—automatic back fire release.

Greatest Dealers' Proposition

AMERICAN DADCO COMPANY

316-L Moffat Building

Detroit, Mich.

Automobile Motors and Mechanism

By THOMAS H. RUSSELL, M. E., LL. B. Author of "Automobile Driving Self-Taught," "Ignition, Timing and Valve Setting," "Motor Boats: Construction and Operation," etc.

Pocket size, 265 pages, blue flexible leather, round corners, red edges, fully illustrated.

CONTENTS.

The Internal Combustion Engine—Principles and construction—Production of the fuel mixture—Function of the carbureter—The cycle of operations—Cylinders, piston and rings—Shafts and bearings—Ignition apparatus—Single and multi-cylinder engines—The two cycle engine—Valves and their functions—Silencing the exhaust—Engine hints and tips—A typical modern motor—Detailed description of construction—Governors and Governors—The centrifugal governor—Throttle valves—Governors and control—The hit-or-miss governor—Carbureters—The float-feed principle—The float chamber and jet—Various types of modern construction—Quality of mixture—Flooding the carbureter—Carbureter troubles and adjustments, etc.—Transmission Mechanism—The Clutch—Various forms in use—Positive and friction clutches—Plate or disk clutches—The combined disk and cone type—Expanding clutches—Clutch troubles, etc.—Gear or Gearing—Belt and chain gearing—Friction gear—Spur or tooth gearing—Spiral, helical, worm and bevel gearing—Epicyclic gear—Infinitely variable gear—Differential or Balance Gear—Its functions—Shafts and Their Functions—The crankshaft, half-speed shaft, countershaft, etc.—Lubrication and Lubricators—Pumps and Their Purposes—Motor Misfiring, Causes and Remedies—Noises in the Motor, Causes and Remedies—Motor Overheating, Causes and Remedies—Electric Motors—Principles and operation—Steam Cars—The engine, generator, reverse gear, etc.

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**Workmanlike
Substantial
Efficient
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complete with gauge, gears and
12 feet of air hose

MANZEL FORD PUMP

A Real Engine-driven Pump for FORD Cars

We know, Mr. Ford Owner, that you are keenly anxious to get rid of the tire-pumping burden. Here is the kind of tire pump you have been waiting for—a sturdy, businesslike and simple device that you can install yourself in three-quarters of an hour, without the aid of a mechanic. When you have once put it on it's there to stay. You can forget it until your tires need inflation. Then couple the hose to pump and gear, throw the gear into mesh, start the engine and in a minute and a half you are on your way.

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It is an accurately built, all metal pump, whose every part is as carefully designed and as precisely machined as your motor's most delicate parts. It's a Ford pump at a Ford price.

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Get your Manzel Ford pump now—and dispel forever that tire-pumping nightmare!

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It is head and shoulders above every other pump where *reliability* and *capacity* are the dominant factors. It is simple to install—you do it yourself—and it's built like a battleship. See it at your dealer's—he has it if he is up to date. If he hasn't, ask us.

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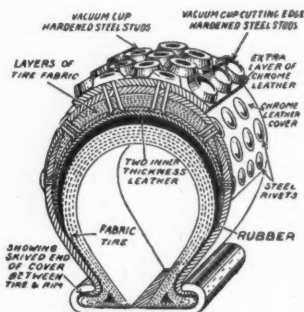
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If the fabric in the tires you are now using is in good condition, we can take them, make them proof against rim-cutting, punctures, blowouts, side wall breaks, skidding, ruts, oil, and give thousands of miles additional service.

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It never rains behind the VANGUARD—
The road is never obscured—
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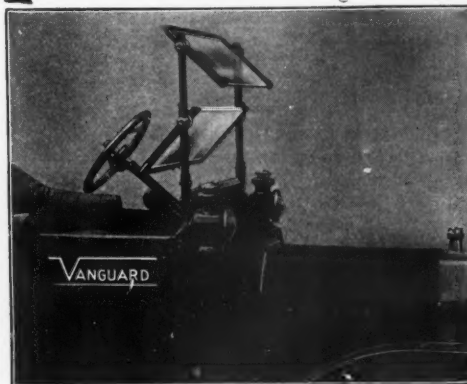
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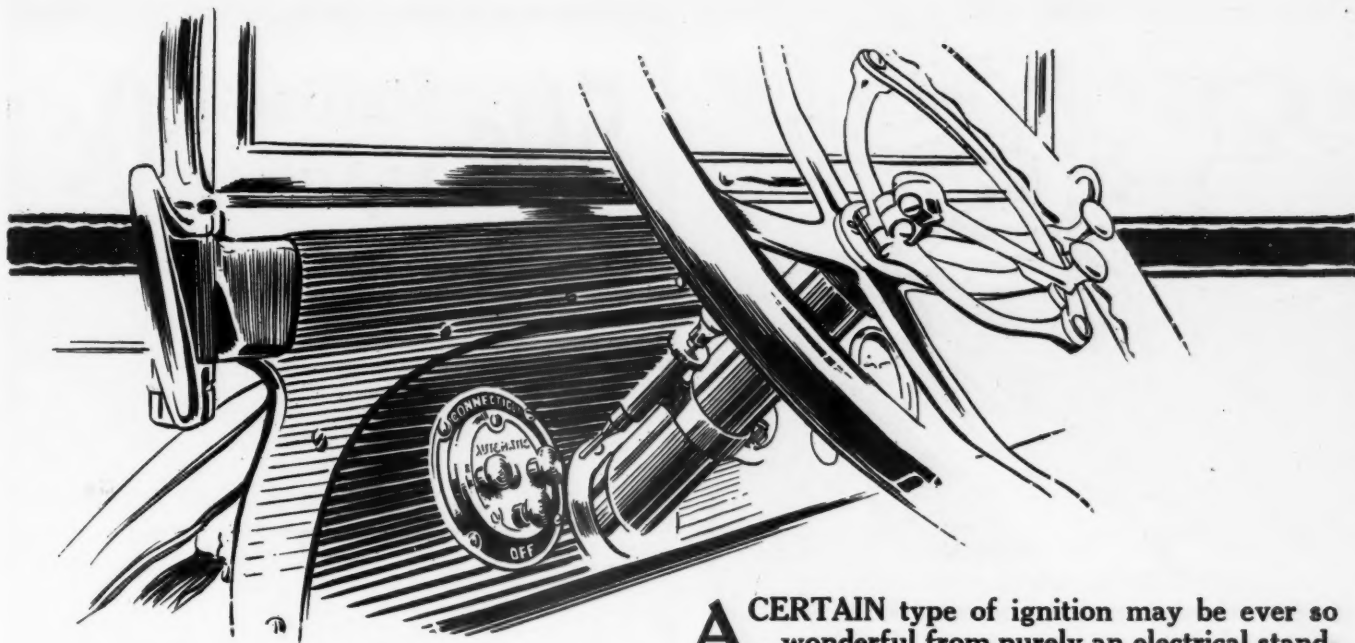
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A CERTAIN type of ignition may be ever so wonderful from purely an electrical standpoint—another may seem to possess some distinct mechanical advantage, but not one of the ignition systems on the market today can compare with CONNECTICUT AUTOMATIC IGNITION in the way it meets all the requirements of the motor in the quality of its spark. This is the most practical thing an ignition system can do—and

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Some systems either deliver a spark of uniform quality at all speeds or—as in the case of the magneto—a spark which changes its quality absolutely contrary to the requirements of the motor.

While CONNECTICUT'S spark at the highest attainable speeds is equal to, if not better, than the magneto's best effort, as motor speed decreases and the mixture becomes poorer, the CONNECTICUT spark grows stronger—until for starting and at slowest speeds it delivers its hottest spark.

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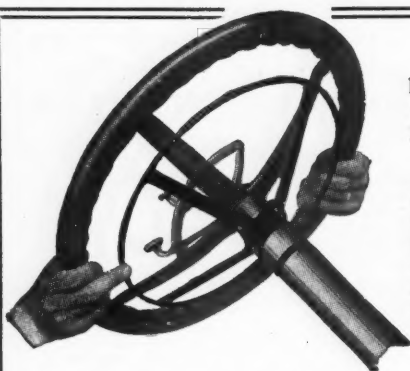
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It's when you have to think about your hands that you lose your head.

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You never have work for more than two hands, if your car is SENG equipped.

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50c Starting 50c and Lighting 50c of Automobiles

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and Lighting and the
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SUBJECTS TREATED IN THIS BOOK

Nature of the Gas Engine Cycle; starting conditions; various objections to starters; advantages. Classes of starters; **mechanical; compressed air; gas; and electric**, showing their construction and operation.

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Dynamos and Motors.—Working principles and construction clearly explained—description of the various parts—**answers relating to troubles:** improper connections; short circuits, etc., etc.—diagram illustrating the directions of current in the field winding and the induced magnetism.

Storage Batteries.—This section gives detailed explanation of the action of a storage cell; also information on Plante, Faure and Edison types of battery—all about the **electrolyte**, how prepared and maintained in proper condition—**charging**—charge indications—charging first time—precautions—rating of discharge capacity—taking battery out of commission—charging through night—**battery troubles in full—mercury arc rectifier.**

List of Full Page Plates—I. Road illumination by electric headlights; II. **Delco** starting system as applied to the **Cole** car. III. **Remy** starting system as applied to the **Mitchell** car; IV. Overland engine equipped with the **U. S. L.** starter, showing how to clean the commutator with a stick of wood; V. Wiring diagram of Westinghouse ignition and lighting system; VI. **Leece-Neville** two unit system; VII. Electric vaporizer and connections; VIII. **Gray and Davis** system as installed on the **Lozier** car; IX. Wiring diagram of electric system for starter, lights and horn as installed in the **Lozier** car; X. Phantom view of **Gray and Davis** system.

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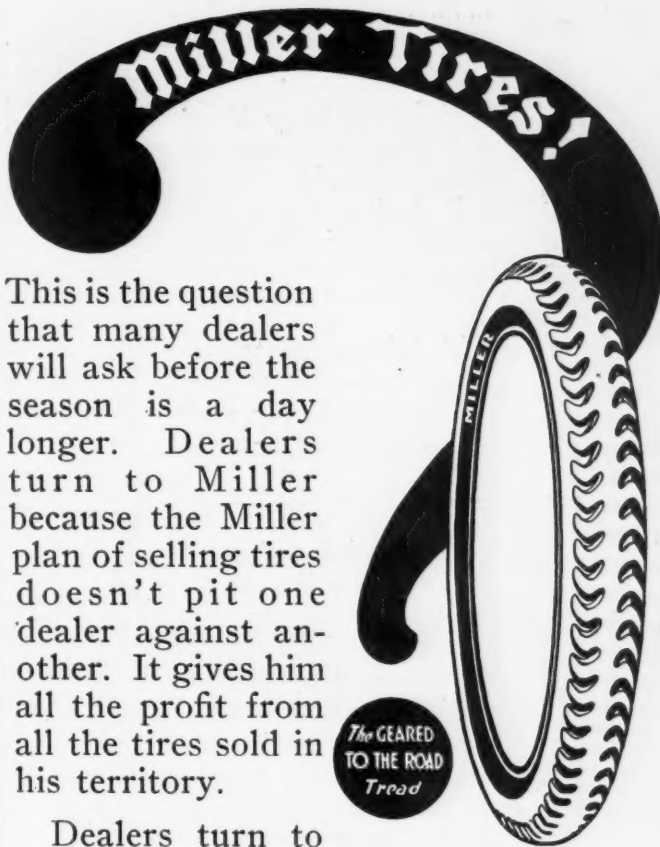
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This is the question that many dealers will ask before the season is a day longer. Dealers turn to Miller because the Miller plan of selling tires doesn't pit one dealer against another. It gives him all the profit from all the tires sold in his territory.

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Miller
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because selling Miller tires means making money and making it easy. Motorists are quick to learn that the Miller Method of building tires retains all the natural oil and wax in the fabric and the rubber's native toughness for wear on the road car.

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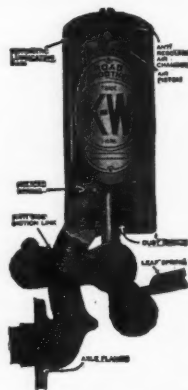
¶ Refer to page 9 in the May 19 issue of Motor World. You will find a suggestion worthy of serious thought.

¶ To take advantage of it will insure increased volume of business, and consequent greater profits.

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\$15 Set of
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Best Value — Best Material

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NOXAL Shock Absorbers are shipped complete with hardened steel spring bolts, Nickered grease cups and instructions for installing.

Anybody can put them on in a few minutes.

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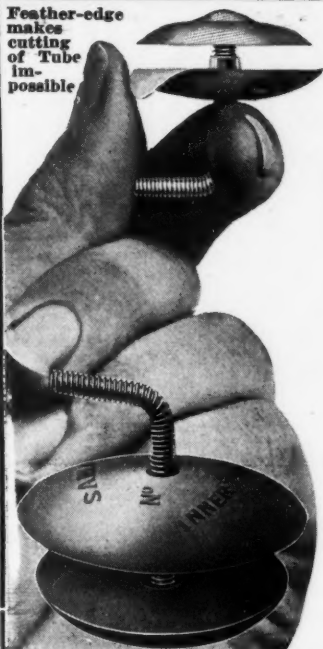
Sold through regular dealers, but where the dealer does not carry them we will ship direct, charges prepaid, the day we receive your order.

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Chicago, Ill.

Feather-edge
makes
cutting
of Tube
im-
possible



Punctures and Small Blowouts Repaired Forever in 1½ min.

This perfect plug solves the puncture problem. No cement, no cleaning, no patches. Will hold for life of tube. Cannot injure tube or shoe. Does not hump into the shoe but lies flat on level with tube. Absolutely guaranteed.

SAMPSON Feather-Edge Innertube Plug

Several hundred jobbers have already stocked them. Your jobber either has or can get them. Don't wait for Sampson Plugs are being heavily advertised and demand is sure to be enormous. See full page advertisement in Saturday Evening Post, May 22d issue.

Three Sizes

- No. 1 Tool and 6 plugs in carton. Sells for \$1.50.
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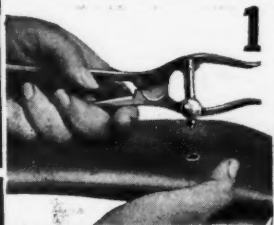
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1



2

1. Tool makes a clean round hole of puncture.
2. Tool stretches hole so plug slips in easily.
3. Screw down plug; snap off screw. Repaired forever.



3

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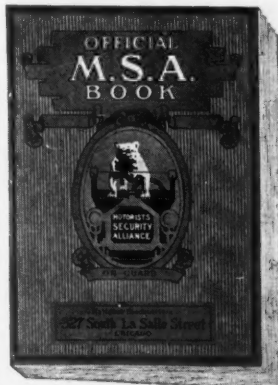


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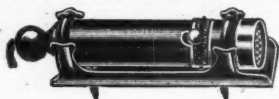
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Please send the official "M. S. A. Book." I own a
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\$2.50

No. 205

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Consists of BALL BEARING DYNAMO, double bulb headlights, tail light with license bracket attached, dash light, ammeter, switch, cutout, 6-80 storage battery, wire, tape, brackets, driving transmission and all that is necessary for a

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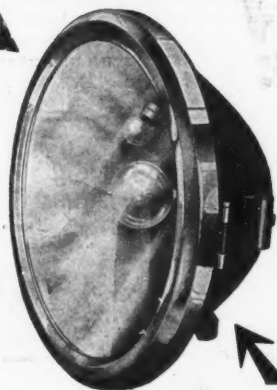
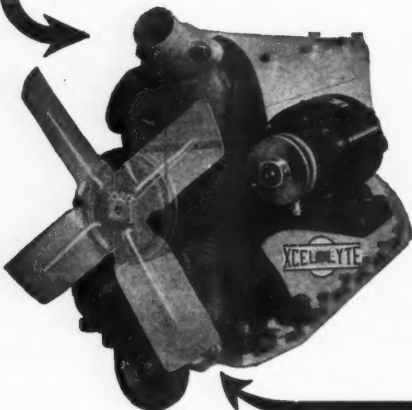
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For 1915 Fords

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The coil of belting used in Snubbers works in a similar way. The bigger the bumps, the tighter the layers of belting will coil, and the greater becomes the resistance against abrupt or excessive spring rebound.

Between the layers of belting is a smooth brass friction band equalizing the friction. Snubbers ensure practically the same easy riding on rough roads as on smooth roads.

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TWO MODELS

Straight Side Tool operates all sizes of Kelsey and Stanweld Split Rims. **Clincher Tool** for Kelsey Split Rims 4 inches and smaller.

**Friestedt
Rim
Contractor
\$2.00**

Guaranteed to make good every claim. Order direct or through your dealer. Indicate which tool is required and give your tire size.

Dealers: Write today for attractive proposition. 75 per cent of the cars have these rims.

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Once installed, the ZENITH is always right. Not a screw, spring, valve or clapper to adjust. The compound spray nozzle gives an automatic priming charge, and then adapts itself to every possible condition at every impulse of the engine, without further attention.

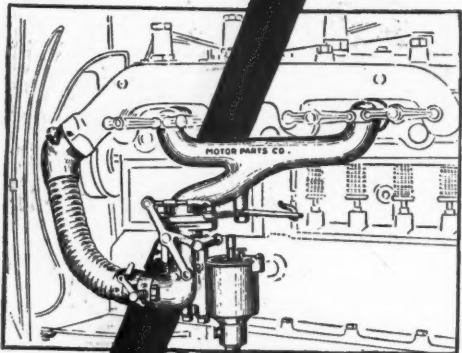
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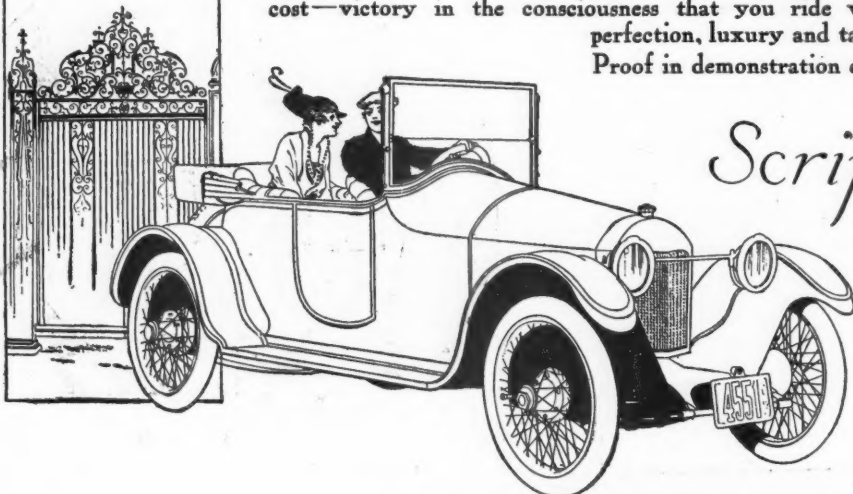
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Power with beauty, speed with grace—these added to faultless design and craftsmanship have produced the masterpiece of motor travel—

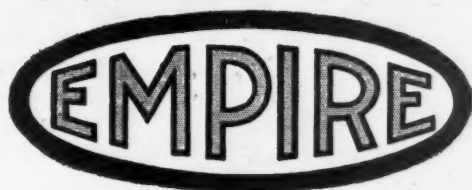
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In this car the modern genius for mechanics combines with classic ideals of form and harmony—the result is Victory. Victory over riding-troubles—victory over useless cost—victory in the consciousness that you ride with the maximum of mechanical perfection, luxury and taste.

Proof in demonstration can be had at the local salesrooms.



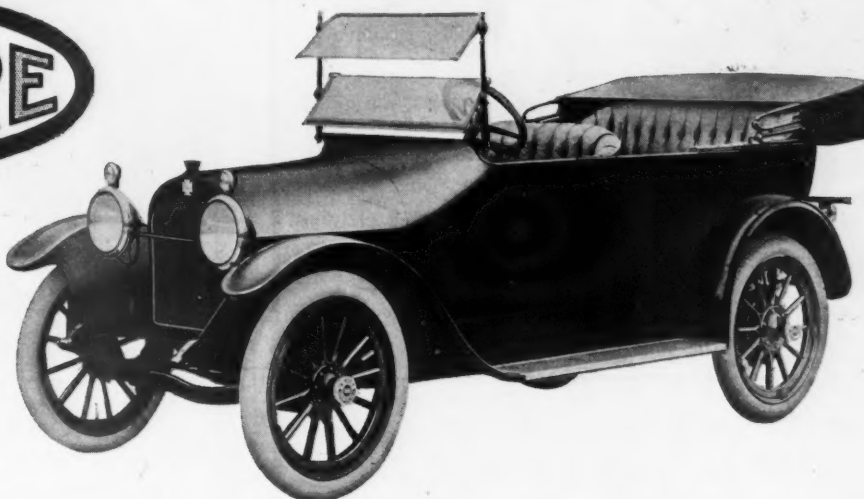
Scripps-Booth Co.
Detroit, Mich.



1916 Model

\$975

Now Ready



THE CAR TO SELL THIS SPRING

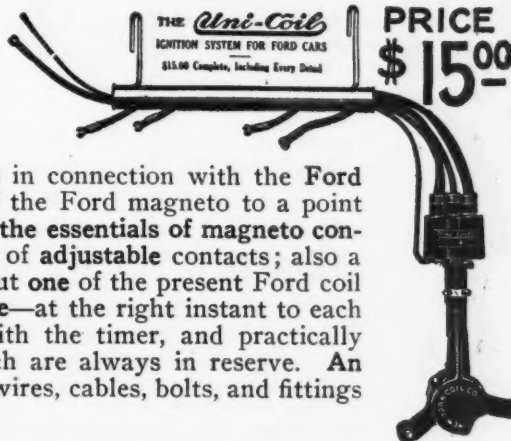
Spring buyers want 1916 models. With the Empire selling rights for your district, you can meet this demand. Empire 1916 models are being delivered now—because Empire cars were ready before announced. They are the most advanced cars on the market, the biggest cars at their price. Your territory still may be open. We will be pleased to give you full details of "the sales proposition that is different."

EMPIRE AUTOMOBILE CO.

Indianapolis, Ind.

New York UNI-Coil Ignition System for Ford Cars

Operated by the Ford Flywheel
Magneto or Battery



A perfected ignition system for the Ford car, which operates in connection with the Ford magneto (or battery), bringing the efficiency and timing of the Ford magneto to a point fully equal to the best high tension magneto, as it employs all the essentials of magneto construction, such as magneto contact breaker, with but one pair of adjustable contacts; also a most improved form of high tension distributor which uses but one of the present Ford coil units, that synchronizes and delivers the spark in perfect time—at the right instant to each cylinder. It allows unlimited spark advance and dispenses with the timer, and practically all of your present wiring, and allows three extra units, which are always in reserve. An elevating oil tight gear bracket is included together with all wires, cables, bolts, and fittings ready for instant installation.

Apparatus similar in name and appearance have lately sprung into existence. Bear in mind that alternating current will, on a heavy pull, cause two cylinders to be fired at the same time, with the possibility of a broken crank shaft. THIS TROUBLE IS IMPOSSIBLE TO OCCUR IN THE GENUINE NEW YORK UNICOIL IGNITION SYSTEM.

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NEW YORK

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By all means write for Free Literature today. Something new, practical and high grade. Practice economy—save hotel bills. Get more pleasure from your outing. Letters of indorsement pour in from every quarter.

MOAT'S FOLDING CAMP STOVES AND AUTO KITCHENETTES

Fills a long-felt want with the outing public. Far superior to anything previously put out. Stoves fold into space less than half the size of suit case, cooking utensils included. Hot, blue flame; WIND-PROOF, Safe! Three sizes, one with folding oven. Kitchenette has everything complete for the tourist. Contains dishes, silverware, cooking utensils and folding stove. 2, 4 and 6-party outfits. Light, compact, beautifully finished. Rides on running-board. Front unfolds into table.

No. 2 Stove Set Up for Use



Write Us Now

Get our circulars and prices before you camp or tour. Drop us postcard today.

Dealers and Agents Wanted.
Attractive Proposition.

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GRAND RAPIDS, WISCONSIN



OLYMPIC

\$6.00

Motor Driven

Under Hood Type \$5
Outside Type \$6

Don't Pay More For a Motor Driven Horn

The OLYMPIC does the work of electric horns that sell for 3 times its price. The OLYMPIC can't be surpassed for service or guarantee. Its achievements lead them all. Easy to operate, and effective.

Order your OLYMPIC today.

Our famous OLYMPIC Vibrator Horn with which 75,000 cars are now equipped, price \$2.50. The best horn of its kind ever made.

Dealers—OLYMPIC is the most for the least money—and dealers' discounts are liberal. Write at once.

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140 Imlay St., Brooklyn, N. Y.

THE F. E. CASTLE COMPANY
Western Distributors
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Twitchell

Air Gauge

The New Positive Lock Stop

feature renders absolutely impossible the registration of any but the exact pressure in your tires.

Don't Guess

Tires inflated to forty pounds look and feel exactly like tires containing eighty. The only way to tell the exact air pressure in your tires is by means of a TWITCHELL gauge.

Price One Dollar

For Sale by Jobbers, Dealers and Garages, or

THE TWITCHELL GAUGE CO.
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METZ '25

The Quality Car

\$600

Touring Model Equipped Complete Including:

Gray & Davis Electric Starter and Electric Lights

This new Metz Touring Model is just as interesting to DEALERS as it is to prospective purchasers. It means bigger sales, more customers, and ALL of them satisfied.

In addition to complete electric system, equipment includes rain-vision built-in windshield, instant one-man top, heavy tufted upholstery, deep cushions, 32 in. wheels, 3½ in. Goodrich clincher tires, Bosch magneto, Hyatt roller bearings, built-in gasoline gauge, speedometer, signal horn, tools, etc.

We want to hear from Dealers
Write for particulars and New Catalog "K"

METZ COMPANY, Waltham, Mass.

KLEARGLOW
 The Auto Light Diffuser

Prevents Accidents

Injuries to driver and pedestrian—and damage to car—resulting from glaring or dimmed motor car headlights. Don't take chances! KLEARGLOW wards off fatalities and smashed cars by **completely** removing the dangerous glare. **Not** a dimmer—KLEARGLOW works without taking away any of the light. Made entirely of glass. Constructed on scientific principles. The soft, easy-to-look-at, unclouded rays from headlights equipped with KLEARGLOW represent **all** the illumination furnished by your lamps—there is no lost power—no waste.

KLEARGLOW was originated in Switzerland and is used extensively in Europe.

Laws on Headlights Are Strict

Get the appliance that will make your lights conform to both city and country statutes covering this vital point. These laws vary in different localities—KLEARGLOW lives up to the specifications of all. Protect yourself from arrest and fine by putting KLEARGLOW on your car. Easily put on in ten minutes in place of your present headlight glass. Fits any car and improves its appearance. The price—\$3.75 a set—is but a small part of the cost of a single accident or fine. Satisfaction guaranteed or money back.

Free to Try

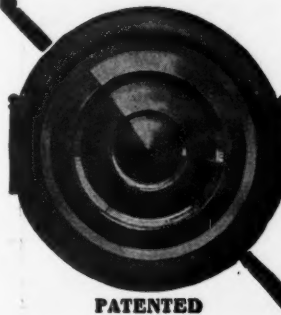
Every motorist needs KLEARGLOW.

Our folder tells how you can try KLEARGLOW free for fifteen days before you purchase. Write for it now—it's worth while. Address

H. G. PARO
 768 Michigan
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 Chicago, Ill.

To JOBBERS and DEALERS

You have never handled a headlight device so effectual as KLEARGLOW. Will satisfy your trade and build your business. Write and ask for our unusual proposition.

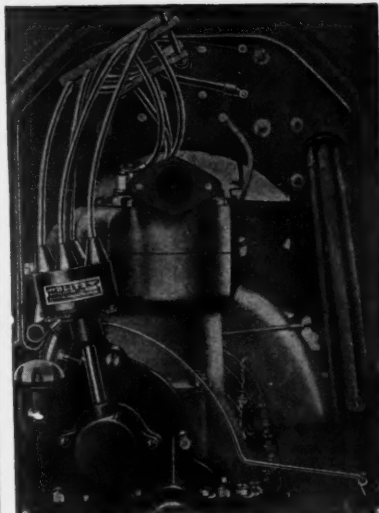


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ONLY \$15 FOR FORDS BLITZ IGNITION SYSTEM

Install a BLITZ. It will give your Ford car a new lease of life—make it run better than it did when new. Prevents sticking of platinum points, burnt out timers, missing and back-firing. Insures uniform spark, perfect timing. Installed without machine work or extra parts.



Showing Simple Installation of the Blitz Ignition System.

Increase your power! Experience easier starting—smoother running! Enjoy the same trouble-proof ignition as that found on the highest-priced cars.

The BLITZ will handle the alternating current of the Ford magneto, as well as battery current. Insures Absolute Synchronism—the delivery at each spark plug of a spark of the same intensity and duration in each cylinder at exactly the same angularity of the crank-shaft.

Price \$15 Complete

At your dealer's, or direct on receipt of price. Send for literature containing full information.

**ELECTRICAL
 SPECIALTIES MFG.
 CO.**

OMAHA NEBRASKA



Get a SHANHOUSE Motor Suit and protect your clothes

A protective garment for motorists, mechanics, farmers and others.

Here is a garment, strong, durable, easy-to-slip-on-or-off that saves its cost in one clothes cleaning. You slip it on when changing a tire, washing, cleaning or oiling a car. Gives freedom of movement without worry of grease.

Not a new-fangled accessory that you can get along without, but a garment you need. Made in one piece of high-grade olive khaki—big, roomy—made for long service and wear.

Use it round the house, in garage, or on the road. Occupies little space. A positive clothes insurance against grease and dirt. Leading clothing dealers and many garages have it.

If your dealer doesn't carry it, send \$2 for one prepaid. Give chest measurement and leg length, khaki or blue denim. Money back gladly if not entirely satisfied with your investment.

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Rockford, Ill.

500 Sold By One Distributer In 90 Days

WITH practically no publicity and with a selling expense of less than \$150.00.

Alex. R. Curtis, at Minneapolis, sold 500 of these trailers in three months. These sales were made largely through the recommendations of purchasers.

The Universal Auto Trailer is built for road use and abuse at automobile speeds. Capacity 1000 lbs.

Can be attached to any make of car in a jiffy



with Curtis Hitch
 Pat. Applied For
 It's All In The Hitch
 \$47.50 Like Cut
 F.O.B. Chicago

Also Made With Hard Rubber Tires and Pneumatic Tires

Write for Descriptive Circulars and Dealers' and Distributors' Selling Proposition
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TIRES and TUBES

are famous for their QUALITY

We wish to announce that irrespective of action by any other organization **Braender Quality Will be Maintained**

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Tires.	Plain.	Non-Skid.	Gray Tube.	Red Tube.
30x3	9.00	10.35	2.35	2.60
30x3 1/2	11.00	13.35	2.70	3.00
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RADIATORS

The Improvement in RADIATORS

NATIONAL CAN COMPANY, Detroit Mich.

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Ford
\$12.50

Controls The Rebound For Comfort

You can't get out and smooth the country roads for easy riding—but you can control backwrenching spring recoil on your car, for comfort, with

The Parker Shock Absorber

—that soothes the springs by maintaining a neutralizing tension between your car and the axle. It is the *only shock absorber that works all the time*. Absolutely guaranteed. Write for details.

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A REAL AUTOMOBILE

The lightest, strongest, most serviceable and economical machine of its kind ever built.

112 inch wheel base. Electrically started and lighted.

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When Purchasing a Car
Insist Upon a

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ELECTRIC
STARTING-LIGHTING
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NEVILLE

100%
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100%
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"The Accepted Standard"

The New Stromberg Carburetors make records for Economy, Power, Acceleration and Smoothness of Running.

Write for Information

Send us make and model of your car and we'll tell you which new model Stromberg is best adapted for it.

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GAS, OIL, AND ELECTRIC

CORCORAN LAMP CO.
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**DOUBLE ACTION
SHOCK ABSORBERS**
HEAVY CAR TYPE
\$35.00 to \$45.00 per SET
FORD TYPE \$15.00 per SET
A. J. PICARD & CO.
1720-22 BROADWAY NEW YORK



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Tire Pump**

**NEW PRICE With Gauge
and "T," \$5.50**

Built like a motor with lapped rings. A high grade pump at a small price for medium size tires. You cannot afford to run your car without this pump.

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NOV. 2, 1909
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Electric Auto-Lite Starting-Lighting-Ignition

Electric Auto-Lite equipment for automobiles is as famous for the service that backs it as for the reliability and economy of its operation.

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Link your motor to the **BIG BOY**—a big plug for big deeds. Guaranteed forever, because it's a—

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REG. U.S. PAT. OFF.
GUARANTEED FOREVER

BIG BOY.....\$1.00	Combination.....\$1.25
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Bush Terminal
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NON-ACID NON-CORROSIVE

Purgene

AUTO CARBON-REMOVER
One Pint
Removed a 1/4-in. carbon deposit from a 60-H. P.-6 in one hour, cost \$1.50.

A Machinist
would have required 80 hours. Cost \$15.00. PURGENE saves time, saves labor, saves gasoline, saves engine, SAVES DOLLARS.

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Price \$2.50 per qt. in U. S. \$3 elsewhere, postpaid. Special discounts to dealers.



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Oklahoma City, April 29th
200 Mile Race

Burman in Peugeot.....1st, MASTER Equipped
Lewis in Stutz.....2nd, MASTER Equipped
Raimey in Case.....3rd, MASTER Equipped
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**NONE BUT
STANDARD STOCK
MASTER CARBURETERS
HAVE EVER BEEN PRODUCED
NO ADJUSTMENTS**

Master Carburetor Corporation
Woodward and Hancock Aves., DETROIT
Pacific Coast States: Master Carburetor Co., Inc., Los Angeles, Cal.

Moline-Knight "40"

F. O. B. **\$1475** Factory

Guaranteed 40 horsepower; 118-inch wheel base; 34x4-inch tires (non-skid rears); 5 passenger; spiral bevel gear rear axle, electrically started and lighted, power pump, left drive, center control, completely equipped. 50 horsepower touring, roadster, sedan, limousine models, \$2500 to \$3800.

Write for detailed specifications.

Moline Automobile Co., East Moline, Ill.

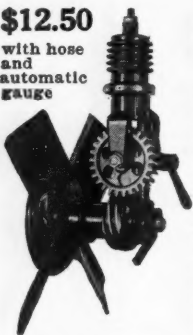


All improvements which the test of time and long service have proved correct are embodied in
THE NEW WORM OR CHAIN DRIVE

Standard Trucks

3 1/2 Ton, Chain...\$2750
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Good proposition to good dealers
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\$12.50with hose
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automatic
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OAKES Pump, Horn and Fan

All three in one assembly—interchangeable with fan on Ford in ten minutes. Simple and efficient. Pumps only when you want to inflate tires. Touch lever—that's all! Finest material—guaranteed.

Horn in Center of Fan

Oakes-Beartone horn is motor driven, an integral part of cooling fan. Press button at driver's seat—that's all. Any volume or range needed—Instant response, never fails. No gears, batteries, wires, or complicated mechanism. Oakes Fan is the best—outwears the car. Automatic gauge free. Write for full particulars or dealer's proposition.

for FORD THE OAKES COMPANY
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"Motor Never Missed a Shot!"

RAJAH WINS

At Oklahoma City, April 29th

BOB BURMAN WIRES:

"Won 200 mile race here today with Rajah Spark Plugs. Motor never missed a shot!"

Rajah Plugs Always Win!

"Ignition Absolutely Sure"

RAJAH AUTO-SUPPLY CO., BLOOMFIELD, N. J.

BOSTONSTARTER For FORD CARS

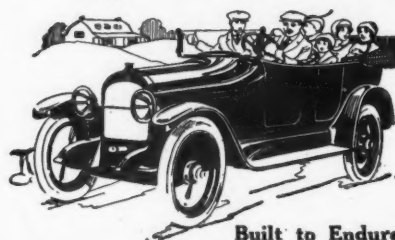
Fully Guaranteed. Does the work. Cost—a fraction of electric starting cost. No harm to car; does not interfere with cranking in usual manner. Releases in case of backfire. Retards spark automatically before starting. Time tried success—no experiment. Be sure you get the BOSTON STARTER. Ask the Ford dealer or your dealer or write.

Boston Starter, Boston Mass.

4 Cyl. 35 H. P.
\$1185

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Built to Endure!

WESTCOTT MOTOR CAR CO.

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WE NOW OFFER

The Searchlight Welder

A complete outfit for Oxy-Acetylene
Welding
at
\$50.00

High in Quality

Low in Price

Write for complete information to

THE SEARCHLIGHT COMPANY
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THE SIMPLEX (Short Turn) AUTOMOBILE TRAILER

The only automobile trailer that trails in the tracks of the automobile. Easily attached to any automobile. Light. Durable. A great convenience for milkmen, grocers, gardeners, merchants. Opens an entirely new field for the automobile dealer. Costs about 10% of the light delivery truck. The man who wants to buy a pleasure car but needs a light truck can be sold a pleasure car and a Simplex Trailer. It's a logical buy, too. Write today for complete details and liberal dealer's proposition.

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Hyatt Quiet Bearings are used in the majority of American made Automobiles

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NO MOVING PARTS
ONLY ONE ADJUSTMENT

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RADIAL RETAINERS **COMPLETE THRUST BEARING**

MADE IN AMERICA

Manufacturers of Star Radial Ball Retainers, Star Ball Thrust Retainers, Star Complete Ball Thrust Bearings

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This is the new warning device that is making such a hit. Screws in place of priming cup and blown by the explosion pressure. Controlled by cable conveniently located for driver. Does not hinder motor. The simplest and most powerful signal made. Absolutely free from trouble and need of adjustment.

Life estimated at over 200 years

Consequently the lowest-priced signal made. Most effective warning you ever heard. A true warning tone, instantly recognized as such. Write for circular.

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Our Oregon agent now selling \$850 worth per month.

\$4.25
Sent prepaid on receipt of price

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Make Sure of Your Lights
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Don't take chances of their failing unexpectedly. A



Weston
Model 354 Ammeter
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will keep you posted every minute regarding electrical conditions. Its exact information is invaluable—the cheapest and best insurance you could buy. Write for full information.

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CRITERION OF ITS CLASS

Thoroughbred Six—\$1875
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Equipped with Moore Multiple Exhaust System

Write for details and co-operative dealer proposition

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New thrills of delight, a new zest of ownership and a fresh consciousness of superiority are yours in the wonder car of 1915—the New-Size Winton Six at \$2285. Impressively high-grade in every detail of mechanism, coach work and finish, charming alike in its appearance and its conduct, this is the one car of the year that automobile experts praise for freedom from experimental risks.

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World's First Maker of Sixes Exclusively

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Seven distinct new styles. Divided front seats and auxiliary seats. Parlor car with adjustable individual arm chairs. Art folio of body styles on request.



National Sixes develop any part of 55 h. p. at a fuel efficiency up to 17 miles per gallon.

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AXLES WHEELS PROPELLERS

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Women Say—
THE ELECTRIC GEAR SHIFT
makes a big gasoline car as easy to drive as an electric.

The Vulcan Electric Gear Shift
is being supplied as special equipment by

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Add to Garage Profits by Oxy-Acetylene Welding

Savings made please your patrons and pay good substantial profits.

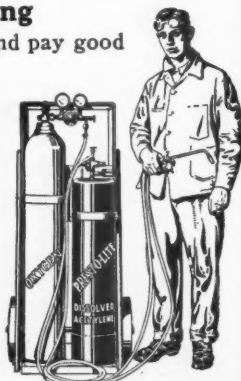
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adds to the efficiency and usefulness of any good welding equipment. We furnish thoroughly high grade welding apparatus for \$80.00. The average user will also need gas cylinders at an additional cost, and about \$10.00 worth of welding supplies. Truck and special equipment for cutting operations at extra cost. Send for details of Prest-O-Lite Service for Oxy-Acetylene Welding.

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Model BX-4
 High Tension
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HEINZE MAGNETOS are superior both mechanically and electrically. Equip with HEINZE and your Ignition requirements will be satisfied.

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Avoid substitutes; Look for the orange-colored can with the above trade-mark

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High and low tension magnetos, make-and-break coils, dash coils, box coils, motorcycle coils, switches, spark plugs and other ignition specialties. Guaranteed satisfaction

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Universal
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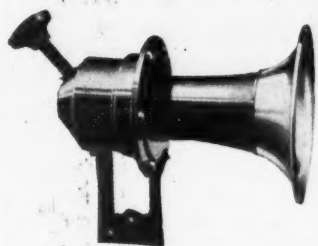


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\$3.00

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—because at small initial and upkeep cost, it gives superior service at an economical figure.

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Model 22
3x5
6-cylinder



"Eklips"

Never misses a spark. Soot-proof and oil-proof features. Hand-turned, imported porcelain or special process mica. Well finished and reliable.

Made to Fit All Cars

Sold direct if your dealer does not handle it. Send for folder—"A Spark Plug of Many Merits."

The Fulton Company

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Cool, Delicious Luncheons

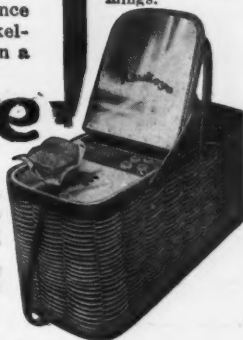
—kept fresh in this refrigerator basket
—can be packed, carried any distance
and enjoyed with a relish. The nickel-plated, tin-lined ice compartment in a

Hawkeye

Refrigerator Basket

insures the hungry motorist, sailor or fisherman a temptingly cool, fresh lunch. Keeps both cold and clean. Protected from dust, germs and insects. Does not drip.
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Tonneau Basket
Rattan, finished deep forest green; lined with non-rustable nickel-plate. Brass or nickel trimmings.

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These maps were prepared for us by the Automobile Blue Book Company. They are handsomely printed in colors, and as nearly perfect as it is possible to make such maps.

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Dept. 1875 Frick Annex
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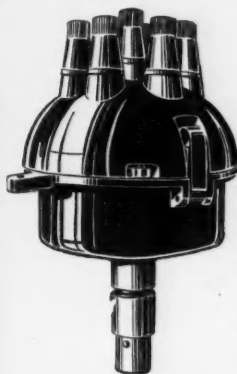
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It is a guide and text book that will post you thoroughly. It tells the proper inflation according to weight, load and season. It describes fully how to protect the tires while car is idle in the garage—how to care for them in winter—how to avoid substances that rot the rubber and fabric. It gives splendid hints on the spare tire and its care—how to carry extra tubes. It explains the tire sleeve, the blow-out patch—repair plasters and plugs and emergency or temporary repairs. This book is quoted as an authority by American and Foreign Automobile Publications, because of the authentic information it contains. It's free to any motorist. No obligations. Just write and we will send it to you without cost.

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Used by one-quarter of all
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\$3.50

The Biggest Horn Value

A full-sized warning signal, with straight down, easy operating plunger. Extra loud. The horn that always works.

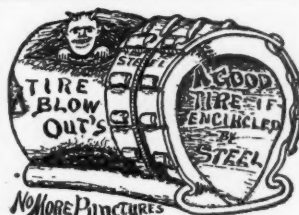
At a Bargain Price

The only \$3.50 warning signal with unqualified 3-year money-back guarantee. Outlasts most cars. Order yours today.

Dealers—Write now for your sample, at special dealers' price. Liberal discounts.

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Washington Blvd. and Des Plaines St.
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Steel Protectors

Each section 2" wide $\frac{1}{8}$ " thick. They hook to rim. As flexible as ever. Anti-skid, can't blow out or rim cut.

HOW CAN THE RUBBER WEAR OFF IF IT IS COVERED WITH STEEL?

Try 2 or 3 sections over any old blowout

Special prices to the first in new territory

Kimball Tire Case Co. 173 Bdwy, Council Bluffs, Ia.



Tire covered complete

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Entz motor generator and starting switch. Practically brand new. Only used two weeks. Will sell both for \$60.00. This starter is stock equipment on Chalmers, White and Franklin cars. Send deposit to cover express charges and we will ship subject to inspection.

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1517 Grand Ave. Kansas City, Mo.

FOR SALE—4-cylinder Thomas engine 5"x6", with carburetor, coil, timer and clutch, also 4-cylinder Cameron air cooled engine almost new, price of either engine \$50.00.

SCHULZ AUTO SUPPLY CO.
Tracy, Iowa

GARAGE OWNERS

There are good profits to be made handling our line of Ford Delivery Bodies; twenty styles to select from; write us for list and discounts. WE ARE FORD COMMERCIAL CAR AGENTS

HAYES-DIEFENDERFER CO.
21 W. 62nd St. N. Y. City

GEARS FOR FORD CARS

Pinion (chrome nickel steel).....\$1.00
Differential ring or master.....\$3.00

Write for other like bargains to
GROSSMAN AUTO PARTS COMPANY
White Plains, N. Y.

HAVE YOU A CUT IN YOUR TIRE?

SEE THAT IT DOES NOT GET WORSE

"Kutfiller" will positively fill up the cut and thereby become an integral part of the tire. Positively self-vulcanizing. The results from its use are very gratifying. Once used always asked for.

¼-lb. Can, \$1.25

Send for a can today

Satisfaction guaranteed or money refunded

S. V. RUBBER WORKS

MORRISTOWN NEW JERSEY

HENDERSON OWNERS

Our Repair Parts Department has been transferred from Indianapolis to our Parts Manufacturing Plant at Detroit.

We are now making all shipments direct from Detroit.

This enables us to absolutely guarantee shipment of every order the same day it is received in our office and it also places us in a position to make reduction on several of the most important repair items for Henderson cars. We have all patterns and engineering data of the old Henderson Motor Car Company and guarantee the accuracy of every part.

Address all letters to the Henderson Motor Car Company, Detroit, Mich.

HENDERSON MOTOR CAR CO.
DETROIT, MICHIGAN

JOB LOT OF BARGAINS

Connecticut automatic ignition switch and coil \$14.25. Windshields, Rands rain vision plate glass, black enamel and nickel, \$7.75. Carburetors, Carter C2, all sizes, \$5.00. Interstate radiators, square tube, \$17.50. Gasoline tanks, large stock, \$2.50 to \$6.50. Ross steering gears for trucks, \$14 to \$16.50. Electric headlights, 10", black and nickel, pair, \$6.00. Gas headlights, pair, black and nickel, \$4.25. Roadster fenders, Kritt car, \$10.75. Gemmer steering gears, Kritt car, \$5.00. Vesta lighting generators, \$17.50. Kritt gasoline tank gauges, 75c. Steel trunk racks, \$1.25, fit all cars.

Hundreds of other bargains.

PROGRESS AUTO PARTS CO.
1511 Prospect Ave. Cleveland, Ohio

INDESTRUCTO SPARK PLUG

Unconditionally guaranteed for the life of the motor. Replaced absolutely free if unserviceable from any reason. Price \$1.00 each. If not satisfied, money gladly refunded. Liberal proposition to dealers.

CONSUMERS TIRE COMPANY
Indianapolis, Indiana

GOGGLES NEW ERA are the best. Dealers and Garages send for our 1915 catalogue—a big line of real money makers.

NEW ERA OPTICAL CO.
The Advertising Building Chicago

K-R-I-T

Car Owners

Let us serve you. We are prepared to furnish original K-R-I-T repair parts at original catalogue prices. Most efficient and largest service department in the world.

Puritan Machine Co.

PROMPT DELIVERIES

410 LAFAYETTE BOULEVARD,
DETROIT, U. S. A.

Mail orders receive quick attention

K R I T Will Be Continued

The recent auction sale at the Kritt plant was for the purpose of disposing of all obsolete material and surplus production stock. No items of any kind were sold that will be needed by us in maintaining the Service Department for Kritt dealers and owners.

The Service Department will be continued on a better and more satisfactory basis than ever before. The auction sale in no way affects the continuation of the business of the Service Department.

The Kritt Motor Car Company is here to stay and you may absolutely depend upon getting prompt and accurate shipment of all parts just as long as there is a Kritt car running.

Address all mail the same as always—to the Kritt Motor Car Company, Detroit, Michigan.

Kritt Motor Car Company Detroit, Michigan

LIKE A VARNISH IT CAN BE USED AS THE FINISHING COAT

Where the lustre has died out. Peerless Mirroroid leaves a rich, full lustre on varnished surfaces; dry in four to five hours. Ask your dealer.

THE COLUMBUS VARNISH CO.
Columbus, Ohio

Lozier Repair Parts

We have on hand repair parts for Lozier Cars at reduced prices. Send old parts for replacement.

Philadelphia Machine Works
67-71 Laurel St., Philadelphia

The Clearing House—continued.

MAXWELL OWNERS AND REPAIRMEN

Why pay 20% advance for your repair parts for the old models of MAXWELL cars? We can supply 90% of your wants at the old list price. Transmission gears and parts in stock for Cadillac, Case, Croxton, Dorris, Elmore, Moline, Moyer, Overland, Regal, Selden, Stoddard, Velle and 75 others at cut prices. Why pay more? Send for price list.

M. P. SUPPLY COMPANY
Atlanta, Georgia

MICHIGAN OWNERS

Our Repair Parts Department has been transferred from Kalamazoo to our Parts Manufacturing Plant at Detroit. We are now making all shipments direct from Detroit. This enables us to absolutely guarantee shipment of every order the same day it is received in our office and it also places us in a position to make reduction on several of the most important repair items for Michigan cars. We have all patterns and engineering data of the old Michigan Company and guarantee the accuracy of every part. Address all letters to the Michigan Motor Car Parts Company, Detroit, Mich.

MICHIGAN MOTOR CAR PARTS CO.
Successors to
Michigan Motor Car Company
Detroit, Michigan

MORE SPEED FOR THE FORD

Special Ratio Differential Ring Gear and Drive Pinion for the Ford. Either 2 4/7 to 1 or 3 to 1 ratio.

More speed with maximum power at a decreased cost in gasoline and oil consumption is the result obtained by using either of these ratios, because they prevent the "racing of the motor" which is necessary with the regular Ford ratio (3.68-1) to make time.

EITHER RATIO \$15.00 PER SET

We also furnish a 4-1 ratio for use on Ford light delivery cars for very hilly or heavy sand country travel.

Detroit Radiator & Specialty Co.
963 Woodward Ave. Detroit, Mich.

NEW 1915 FORD ROADSTER BODIES

These bodies include new cowl, top, cushions, side curtains, slip cover, floor boards, rubber mat, dash and hood support, windshield, rear round fenders and irons, 2 side lamps and tail lamp. Complete, \$65.00 f. o. b. Detroit, crated. Fit any Ford chassis from 1912 up.

JOHN C. NAGEL
425-33 Baker St. Detroit, Mich.

No More Sticking of Tires

One coat of Peerless Rim Paint keeps the rims free from rust and allows the tires to be removed with ease. Ask your dealer.

THE COLUMBUS VARNISH CO.
Columbus, Ohio

ONE MINUTE FORD TIRE TOOL
This tool will positively completely change a Ford clincher tire in one minute without labor. Postpaid for \$1.00. Dealers, send for circular and dozen price.
HEYNS BAZAAR Detroit, Mich.

Paint Your Car Yourself
Save \$25 to \$75 by doing the work at home with the Arsenal system. Our big free booklet, "The Car Beautiful," tells how. Send for it today.

Arsenal Varnish Company
Auto Dept. Rock Island, Ill.

MILLION DOLLAR Automobile Plant

For Sale at Public Auction

One of the Largest and Best Equipped
Automobile Manufacturing Plants
Will Be Sold at Public Auction
at Plattsburg, N. Y.

Tuesday, May 25, 1915

at 10 A. M. and will continue until all sold.

This plant has been abandoned by the re-organized Lozier Motor Company, they having concentrated their manufacturing organization entirely into their new plant at Detroit, Mich., permitting therefore their plant at Plattsburg, N. Y., to come into the market for sale at public auction.

MACHINERY

About 300 machines of high grade makes such as Pratt & Whitney turret lathes, engine lathes; Bausch, Bickford and Cincinnati single, multiple and radial drills; Norton, Landis, Heald and Browne & Sharpe internal, plain and universal grinders; Browne & Sharpe, Cincinnati and Gould & Eberhardt shapers, planers, millers, etc., and a large assortment of other makes all in first class condition.

SMALL TOOLS

About \$100,000.00 worth of small standard tools such as Browne & Sharpe micrometers, drills, gauges, mandrels, taps, cutters, etc., and very large variety of new and second hand standard tools.

SUPPLIES

Files, hack saws, emery and cloth wheels, roller and ball bearings, steel balls, machine and wood screws, in all assortments and sizes.

BELTING, SHAFTING AND PULLEYS

About 100,000 feet of single and double ply belting in all sizes, large stock of wood and steel pulleys and several thousand feet of main line shafting.

RAW STOCK

About 500 tons new iron and steel; rods, tubing, sheets, etc., of soft and high speed tool steel in such brands as Krupp, Bethlehem, Sanderson, Zenith, Capital, etc.

GENERAL EQUIPMENT

A dozen large electric traveling cranes, large number of electric induction motors; brass, nickel and copper plating outfits; and every other possible up to date machine shop appliance. High grade office furniture and fixtures and equipment.

MARINE DEPARTMENT

The Lozier marine department consists of the service, good will, equipment, correspondence, and everything pertaining to the same, and will be sold in one lot as a going business.

REAL ESTATE

The real estate comprises fifteen modern brick buildings well equipped with traveling cranes, electric motors, air compressor system, and everything possible to an up-to-date plant and covers 145,000 sq. ft. of floor space. It is situated on a 327 acre plot and has canal as well as railroad connections. The plant will be sold in parcels to suit.

MANUFACTURERS, DEALERS and SPECULATORS are all invited, as this will be sold in lots without reserve. For further particulars apply to

Chas. Shongood, Auctioneer

539 Broadway, New York City,
or LOZIER MOTOR COMPANY,
Plattsburg, N. Y.

Frost-O-Lite Gas Tanks B, \$10.50, Black and Nickel Windshields, \$8; Ford Gas and Electric Head Lamps, \$3.25 pair; Spark Plugs, \$0.25. One-third with orders.

BENEDICT, 63 Winder St., Detroit, Mich.

THE WAR WILL NEVER END

on high prices for automobile repair parts and accessories as far as we are concerned. We buy for cash—the entire stocks of defunct automobile companies and sell for cash. You profit. A saving to you of 50% over manufacturer's prices.

GAS HEAD LAMPS

For Ford Cars—Black or nickel finish, 8 1/2 inch diameter, per pair\$3.60

Oil Tail Lamps

E. & J. Tail lamps, black and brass, each\$1.50

Oil Side Lamps

Oil side lamps, black and brass, per pair\$2.50

REFLECTORS—GAS LAMP

Complete with bulb, per pair\$1.50

MONDEX SHOCK ABSORBERS

Set of four, former price \$50. Our price\$12.00

FENDERS

Crown Fenders for Ford Cars—New, latest type; made to fit contour of wheel, per set\$12.00

CARBURETORS

Kingston, 1 in.\$2.75
Kingston, 1 1/2 in.\$3.95
Holly, 1 in.\$3.00
Stromberg, 1 in.\$8.20
Bennett, 1 1/4 in.\$4.50
All makes and sizes—Carburetors—Bargains.

MAGNETOS AND COILS

Briggs, 4 cylinder magnetos and coils, complete\$15.00
Heinze, 4 cylinder coils\$6.00
Lots of other models. Write us.

AUTO SPRINGS

Automobile Springs—All sizes—all makes of cars\$2.00 up

GASOLINE TANKS

Square—many sizes\$1.00 up
Round—12x30 in.\$2.50
Oval—11x30x15 in.\$4.50

RADIATORS

For Ford Cars—
Model T—Honeycomb, new\$17.00
Model T—Honeycomb (V-shape, brass)\$25.00
Model T—(Honeycomb (V-shape, nickel)\$25.00
Big stock radiators—for all other cars.

TOPS

For Ford Touring Car\$15.00
Roadster\$11.00
Complete with side curtains and boot—Tops—all other cars—Bargains.

CADILLAC BODIES

For 1913 Model, black, new, upholstered, wiring, etc., complete, price\$65.00

Puritan Permanent Portable Garages

10x14 ft., wood, easily erected\$62.50
10x18 ft., wood, simple to erect\$75.00
9x16 feet, all steel, burglar proof\$100.00

FRONT AND REAR AXLES

Front axles (all sizes and makes)\$10.00 up
Rear axles\$25.00 up

TRANSMISSIONS

Sliding gear, 3 speeds ahead and one reverse, complete with control levers\$40.00

PURITAN MACHINE CO.

410 Lafayette Boulevard, Detroit, U. S. A.

Prompt Deliveries

Mail and Telegraph Orders Our Specialty. Write for Catalogue. "If it's on earth we have it."

ALL PARTS FOR ALL CARS

The Clearing House—continued.

The reasons are many why you should send us your orders

PRICES SHOULD CONVINCE YOU

Ford Touring Car Tops, complete with curtains and top boot,
ready to put on your car.....\$15.00
Ford Roadster Tops, complete..... 11.00

Chalmers Tops	Magnetos	Carburetors
Many models.....\$18.00	4 cyl. Remy—Type S.....\$10.00	1" Holly, Ford type.....\$3.00
Maxwell 25 Tops	4 cyl. Remy—Type E..... 10.00	1" Kingston, Ford type..... 2.00
Less curtains.....\$6.00	4 cyl. Remy—Type R D..... 10.00	1" Holly, top intake..... 8.00

DEMOUNTABLE RIMS FOR FORD AND MAXWELL CARS

This includes 4 wheels, either black or natural wood finish, with 5 demountable rims—with hub bolts and rim brace. Price per set.....\$14.00

Ford Specials		
30 x 8 Clincher Wheels.....\$ 1.50	11" Bullet Electric Head Lamps, pair.....\$ 7.00	Studebaker 35..... 25.00
30 x 8 1/2 Clincher Wheels..... 2.00	Model E Prestolite Tanks..... 8.00	E M F 30..... 23.50
Spark Plugs—per dozen..... 1.80	Splitdorf 4 cylinder Coils..... 6.00	Studebaker 25..... 20.00
Special ratio differential gears, per set..... 15.00	Remy R L Coils..... 5.00	Buicks—all models. Prices right.
"V" shape Honeycomb Radiator, nickel... 25.00	Chalmers Atwater Kent System..... 10.00	Guaranteed Lighting Batteries
"V" shape Honeycomb Radiator, brass... 23.00	8 1/4 x 4 and 4 1/2 Q. D. Wheels..... 2.00	6 volt, 60 amp.....\$ 8.90
Straight front Honeycomb Radiator..... 18.00	Gemmer Steering Gears, L. H..... 8.00	6 volt, 80 amp..... 10.00
Switch Locks with key......50	Jacob Steering Gears, R. H..... 10.00	6 volt, 100 amp..... 11.90
Tire Carriers—side..... 2.00	18" Steering Wheels with aluminum spider 2.00	6 volt, 150 amp..... 17.00
Tool Boxes..... 2.50	16" Steering Wheels..... 1.50	16 volt, 35 amp. Starting and Lighting
Shock Absorbers..... 4.00	Spring Clips, per dozen......50	Batteries..... 12.50
Crown Fenders, per set..... 12.00	18 gallon Oval Gasoline Tanks..... 3.00	60 Mile Stewart Speedometer Heads..... 3.00
Bullet Electric Head Lamps, pair..... 5.00	E M F "30" Four-Door Bodies, upholstered 60.00	Baird Top Holders, pair..... 1.00
Oil Tail Lamps..... 1.25	Three Speed Sliding Gear Transmission... 50.00	Wide Sweep Rim Brace......45
K. W. Switch Locks..... 3.50	Heavy type Shock Absorbers, \$35.00 type.. 10.00	
Standard Ford Ring Gear and Pinion, set.. 4.75		
	Guaranteed Radiators	Baker Rims and Parts
	Hupp 20 Honeycomb.....\$25.00	All types and sizes. Write for prices.

Guaranteed Spark Plugs—all sizes—per dozen, \$1.80

Schebler Carburetors—All Models and Sizes

Buick Springs—For All Models

Write for Bulletins

AUTOMOBILE SPECIALTY COMPANY, 999 WOODWARD AVENUE DETROIT, MICH.

RACING BODIES AND SEATS
for all chassis—guaranteed to fit.
Fenders, Hoods, Tanks, Radiators
STANDARD AUTO SHEET METAL WORKS
532 So. Canal Street Chicago, Ill.

RACING SEATS
SPEEDSTER BODIES
All equipment for changing your car to a Speedster
Bodies, Tanks, Hoods, Cowls, etc.
CHICAGO AUTO BODY CO.
1627 Michigan Ave. Chicago, Ill.

RADIATOR BARGAINS
Ford Model T Tubular.....\$17.00
Ford Model T Honeycomb,
V shaped..... 25.00
Buick 16 and 17..... 33.50
Buick 10..... 20.00
Hudson 20, 32 and 33..... 28.50
Chalmers 30..... 30.00
Everett 30 Tubular..... 14.00

Write for prices on any other makes
AUTOMOBILE APPLIANCE CO.
1436-38 S. Michigan Ave., Chicago, Ill.

RADIATOR BARGAIN
in Studebaker Radiators
We have a quantity of radiators for Studebaker cars on hand, and offer them for immediate sale at an exceptionally low cash price.
Every one is a new Fin and Tube radiator, guaranteed to fit
Studebaker 35.....\$23.50
Studebaker 25..... 19.50
Send in your check now—They won't last long
Detroit Radiator & Specialty Co.
963 Woodward Ave. Detroit, Mich.

RADIATORS

NEW GUARANTEED

	Tubular.	Honeycomb.
Ford T.....\$17.00	\$19.50	
Buick 10..... 19.75	22.50	
Hudsons, 20-33..... 29.00	29.00	
Overlands..... 31.00	33.00	

We have radiators, both tubular and honeycomb, to fit any car. Write us for prices before buying. Send in your old radiators for repairs. We are experts. We'll make allowances on your old radiator.

WORLD'S LARGEST DEALERS

in automobiles and accessories. Send for the great

PRICE WRECKER

the money saver, covering everything pertaining to an auto

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SHIP THAT TROUBLESOME CARBURETOR
by Parcel Post. We rebuild and install new parts. Factory testing methods used. Service Station for Rayfield, Schebler, Stromberg and Holley. All work guaranteed. **Wills, Carburetor Specialist, 358-360 Belleville Ave., Newark, N. J.**

REPAIR PARTS FOR THE FOLLOWING
Krit, Car-Nation, Keeton, F. A. L., Elmore, Deal, Midland, American, Henderson furnished. We also build and repair radiators, cylinders, crank shafts, etc.

AUTO PARTS COMPANY
737 Jackson Blvd. Chicago, Ill.

RIMS
All Makes and Types
Parts for all old types, including Goodyear '07
LARGEST DISTRIBUTORS
DEALERS—Write for Prices

CITY AUTO TIRE & SUPPLY CO.
2352 Euclid Avenue Cleveland, Ohio

SPEEDOMETER REPAIR CO.
Parts Repaired and Furnished for any Speedometer
The ONLY Known Concern Repairing Broken Speedometer Shafts, any make repaired.
1303 W. Jackson Blvd., Chicago, Ill.

Sun, Rain, Snow and Sleet Eat Out the Life

Or oil, causing decay in leather, rubber and pantasote tops. Peerless Leather Top Dressing is an oil preparation which adds new life to old tops. Ask your dealer.

THE COLUMBUS VARNISH CO.
Columbus, Ohio

U-KAN-PLATE—Extra Strength (Label red)—
the polish that silver plates. Easily demonstrated on your car. Cleans Nickel without rubbing off the plating. Silver Plates the Brassy Parts. Unusual side-line opportunity.
INFICO CO., 432 Presser Bldg., Phila., Pa.

The Clearing House—continued.

SERVICE TO CAR OWNERS

A synonym of service is benefit. That's exactly what you'll do if you let us serve you. Our huge warehouses located in Detroit, the very heart of the automobile industry, contain over 1,600,000 auto parts—the largest and best equipped auto accessory and repair parts distributors in the world. During the past ten years we have acquired through outright purchase 65 defunct automobile companies

Look This List Over

Krit, Speedwell, Omaha, Carhartt, Henderson, Clark-Carter, California, Dart, Barnes, Anhut, Elmore, Aero-car, Everett, Warren, Marquette, Rainier, DeLuxe, Welch Pontiac, Welch Detroit, DeMott, Queen, Cutting, Grabowsky, Michigan, F. A. L. Car, Reliable, Dayton, Wayne, Northern, Abbott, Ohio, Crescent, and many others.

ALL SERVICE PARTS ALL CARS

Our Service Department is the best organized, largest and most efficient in the world. We are prepared to make prompt delivery of any repair part for any car in addition to all cars mentioned above. Our huge purchasing power enables us to sell one-third below manufacturer's quotations—we buy and sell for cash. Let us make replacement of your repair parts. Write us now your requirements.

PURITAN MACHINE CO.

WATCH US GROW
410 Lafayette Boulevard, Detroit, U. S. A.
ALL PARTS FOR ALL CARS

Sure-Go Ford Fan Belt

Made of web and leather. Web on outside prevents stretching leather on inside. Makes smooth wearing surfaces. Ask the dealer, or send us 50c for sample.

HARPHAM BROS. COMPANY
LINCOLN, NEBRASKA
Manufacturers

WHEELS

For any car or Truck. New FORD Wheels with 30x3½ Clincher rims, \$2.35. Liberal discount to dealers.

MILLAR WHEEL WORKS
2211 S. Michigan Ave. Chicago

50c THE ECONOMY 50c AUTOMATIC AUTO JACK

Lifts all four wheels off the floor, saves tires and has only four moving parts; so simple a 15-year-old boy can make one. Complete instructions and blueprint sent for 50c. Why pay more when this Jack can be made in a few hours' time. Write to the

ECONOMY COMPANY
Box 475 Elmhurst, Ill.

\$62.50 GARAGE \$62.50
10x12 FORD SPECIAL 10x12
2-foot width \$10.00 extra 2-foot length
GARAGE CONSTRUCTION COMPANY
Grant & Oliver Ave. Pittsburgh, Pa.

We Tear 'Em Up and Sell the Pieces

We Can Save You Money on Repair Parts or Supplies for Your Auto.

We also buy old autos—condition no object—or any part of an auto, or if you want to trade parts we will trade with you.

MOTORS

Empire 1912, 20 H. P.	\$ 75.00
Bergdoll 1913, 30 H. P. Unit Power Plant	150.00
Jackson 1910, 40 H. P. Unit Power Plant	150.00
2 Cyl. Motors	\$25.00 to \$50.00
Great Smith 45 H. P.	75.00
Stoddard-Dayton 8K 35 H. P.	75.00

Can supply you with Crank Cases, Crank Shafts, Cam Shafts, Cylinders, Pistons, Connecting Rods, Radiators, Gears (any style), Timers, Magnetos, Coils, Carburetors, Manifolds, Water Pumps, Transmissions, Rear and Front Axles, Wheels, Steering Gears (complete), Steering Wheels, Gasoline Tanks, Wind Shields, Springs, Bodies, Seats and Cushions, Jacks, Tires and Tubes, Head Lamps, Side Lamps and Tail Lamps (any style), Prest-O-Lite and Search Light Tanks, Horns, Mufflers—in fact, any part of an auto.

OUR GUARANTEE TO ALL—IF NOT SATISFIED WITH YOUR BARGAIN, RETURN AND WE WILL REFUND YOUR MONEY.

AUTO WRECKING CO.

Old Church, 13th and Oak
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53 W. Jackson Blvd., Chicago
Established 1864. Main Office, Washington

RADIATOR & LAMP REPAIRING

ALL AUTO PARTS LOOK NEW after we nickel-plate them. Radiators, lamps, hub caps and all parts replated like new—the cost is very small

M. L. UDWIN CO.,
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ALL OUR RADIATOR REPAIRING GUARANTEED. New Radiators, Hoods, Fenders, Tanks and New Cores installed in old radiators at bargain prices.

ILLINOIS AUTO SHEET METAL WORKS
1712-14 Michigan Ave. Chicago, Ill.

A New Radiator or Your Old One repaired. Repairs in one day—a new radiator in two days. We are specialists also on fenders, hoods, gas tanks, lamps and all auto sheet metal work.

WABASH AUTO RADIATOR MFG. CO.
(Harrison 4126) 1137 Wabash Ave., Chicago, Ill.

AUTO RADIATOR COMPANY
Does your radiator need repairing? If so, give us a trial. We guarantee satisfaction. Repairing and remodeling our specialty.
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CHICAGO MFG. CO.

1458-60-62-64 Michigan Ave., Chicago

We are the only radiator manufacturers in Chicago making a square tube radiator. New guaranteed cores placed in old radiators. We also manufacture Hoods, Fenders, Tanks and Pans and do guaranteed repair work. Prompt service.

M. & L. Auto Sheet Metal Works

Rebuild and repair radiators, hoods, fenders, tanks, lamps, etc. Tel. Douglas 4024.

3518 Vincennes Ave., Chicago, Ill.

ONLY RADIATOR FACTORY IN NORTHWEST

Pioneer manufacturer. Why send your radiator down east when you can ship it to us, save time, expense, freight, money, and get best workmanship. Prices right. Make new radiators, allow for old one.

TODD MANUFACTURING CO.
820-824 Mary Pl. Minneapolis, Minn.

RADIATORS REPAIRED

We are experts in repairing and rebuilding radiators. We make your radiator look like new.

F. C. ROHDE
4135 Olive St. St. Louis, Mo.

SHEPPARD MANUFACTURING CO.

1331 Jackson Boulevard, Chicago

AUTO RADIATORS MANUFACTURED
for any make of car.

RADIATORS REPAIRED

Leaking and wrecked radiators made equal to new. New cores or any part fitted in any radiator. Hoods, Fenders, Tanks made to order. **GUARANTEED WORK—QUICK SERVICE** Write for prices. Phone Haymarket 4037.

W(RIGHT) RADIATORS

Have stood the test of years—most durable and efficient. Get the best at less cost than others. Don't order until you send for our prices, and illustration of construction. Honeycomb and Bridge Fin Types (tubular). All standard makes in stock. Exceptionally low price on Fords. Dealers' discount.

Wright Cooler & Hood Co.
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REBUILDING AND REPAIRING

A. A. A. SCORED CYLINDERS
Repaired by electricity. Filled with silver composition. Same piston and rings used. No warping of cylinders. Also welding.
L. LAWRENCE & CO.
Newark, N. J.

ANDRE G. CATELAIN

Everready Automatic Engine Starter. General machine work for foreign and American cars. Welding of all metals. Manufacturer Catelain Hose Coupling.

1446-8 Indiana Avenue Chicago, Ill.

Crankshafts, Crankcases, Connecting Rods, pistons, scored cylinders made equal to new with our New Silver Iron process—use the same piston and rings.

POWELL-ELLIOTT AUTO REPAIR CO.
143 Rogers Ave., cor. Sterling Pl., Brooklyn, N. Y.

CYLINDER GRINDING

Special Light Alloy
Pistons

Our special facilities enable us to do highest grade work. Over 225 piston patterns.

AUTO ENGINE WORKS
ST. PAUL, MINN.

The Clearing House—continued.

CYLINDER GRINDING

on automatic machinery by skilled mechanics at prices that will interest you. Gears, axles, valves and parts of all kinds made of high grade alloy steel. Send us your worn or broken parts and we will replace them.

Oxy-Acetylene Welding
of cracked cylinders a specialty

ADAPT MACHINERY CO.

1624 So. Wabash Ave. Chicago, Ill.

CYLINDER GRINDING, NEW PISTONS AND RINGS

By engine builders. Workmanship and equipment the very best. Oversized castings in stock. Ford cylinders reground, new pistons and rings \$15 per set. Oxy-Acetylene welding. Work guaranteed; prompt service. Write for prices.

BUTLER MFG. CO.

Established 1897 KNIGHTSTOWN, IND.

Cylinders Rebored & Reground

and fitted with lighter pistons and McCadden Leakless Rings, regrind pins and rebush rods, makes a smoother running motor than a new one. We set the pace on better rings and lighter pistons.

McCADDEN MACHINE WORKS

St. Cloud, Minn.

CYLINDERS REBORED AND REGROUND

Fitted with my heat treated, light weight pistons and patented three section rings.
From \$6 to \$15.00 per Cylinder
Ford cylinders reground, fitted with new piston rings, wrist pins and bushings for \$20.00.

TRUMP MANUFACTURING CO.

Crown Point, Ind.

CYLINDERS REBORED

Including new pistons and rings, \$7 to \$11 per cylinder. General overhauling and repairing.

Welding

Cylinders, Crank Cases, and Crank Shafts Welded.

STERLING ENGINE COMPANY

331 So. Clinton St. Chicago, Ill.

CYLINDER REGRINDING

Including New Pistons and Rings. All makes, \$5.00 per Cylinder. Write

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and fitted with Special Composition heat-treated rings and heat-treated pistons. \$7.00 to \$15.00 per cylinder. Ford cylinders reground and fitted with Standard weight pistons, \$18.00. Special light pistons, \$24.00. Oxy-Acetylene Welding.

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30x3 1/2	6.00	7.80	34x4 1/2	10.00	17.60
32x3 1/2	7.00	8.75	36x4 1/2	11.00	17.90
32x4	9.00	11.85	37x5	12.00	21.00

10% deposit with order. Balance C. O. D. subject to examination.

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25%

To dealers and users on double tread stitched tire—for the month of MAY on account of overstock.

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Double Tread Tires

Oil-proof Puncture-proof Weather-proof

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Guaranteed 2,500 Miles

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By our remarkable process we rejuvenate your old junk tires, making your two old tires into one "Tico Red" Double Tread Tire.

Our new red chemical application makes the "Tico Red" Double Tread Tires absolutely oil proof and weather proof, thereby insuring them against the harmful effects of oil roads and oily garage floors and against water and sandy roads.

"TICO RED" DOUBLE TREAD TIRES have double thickness and are almost impossible to puncture.

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"TICO RED" DOUBLE TREAD TIRES made from your old tires mean a remarkable saving.

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32x3 1/2	2.70	36x4 1/2	3.80
34x3 1/2	2.80	37x4 1/2	3.90
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32x3 1/2	7.15	36x4 1/2	12.50
34x3 1/2	7.55	37x4 1/2	13.00
31x4	8.15	35x5	13.50
32x4	8.75	36x5	13.75
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33x4	12.60	37x5	21.00

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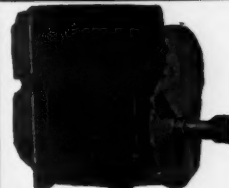


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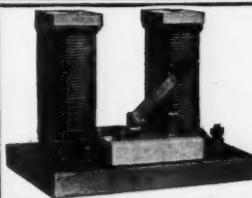


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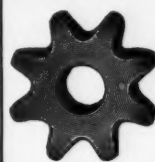
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**USE ELEKTRA ITS
THE SAFEST
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**ON THE STEEPEST HILL
IT'S A FRIEND INDEED**

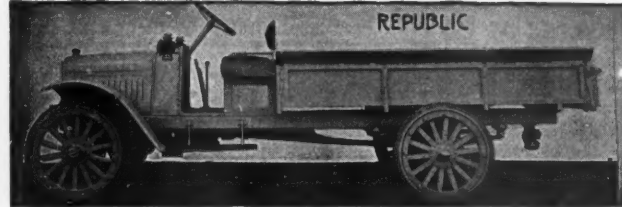
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Republic Motor Trucks

The Fastest Selling Line of Motor Trucks in America

¾-ton with express body, internal gear drive.....\$ 995.00

1½-2-ton chassis, internal gear drive 1575.00

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No Better Units Built

We ask the opportunity to prove our statements.
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Republic Motor Truck Co., Alma, Mich.

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The Allen Auto Specialty Co.
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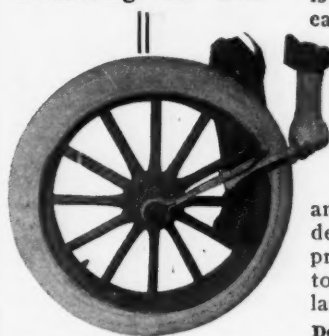
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Use the Right Tool for the Right Work



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You wouldn't try to pump tires with a monkey wrench—
Or remove nuts with a tire pump, would you?
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in any position, wherever the
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on the cap, the
bottom shoe, the
detachable shoe. —
Up she goes on hill-
sides, in mud, any-
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No. 36 — ½ Ton
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the Slant
out of Hills

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Made in
all sizes

Piston Rings

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adjusted

Made by McQuay-Norris Mfg. Co.

Their Use Insures:

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LEAK-PROOF Piston Rings have equal bearing on cylinder wall and perfect fit to piston-head, which results in proper compression of each fuel charge and the application of the whole power impulse. They are light tension rings tending to reduce friction loss. They are permanently elastic—take the wear from the cylinder, yet will outlast the motor.

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In use on
over

**300,000
Motors**

Branch Offices

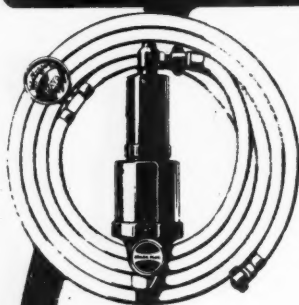
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DALLAS—509 Juanita Bldg.
ST. PAUL—American National Bank Bldg.

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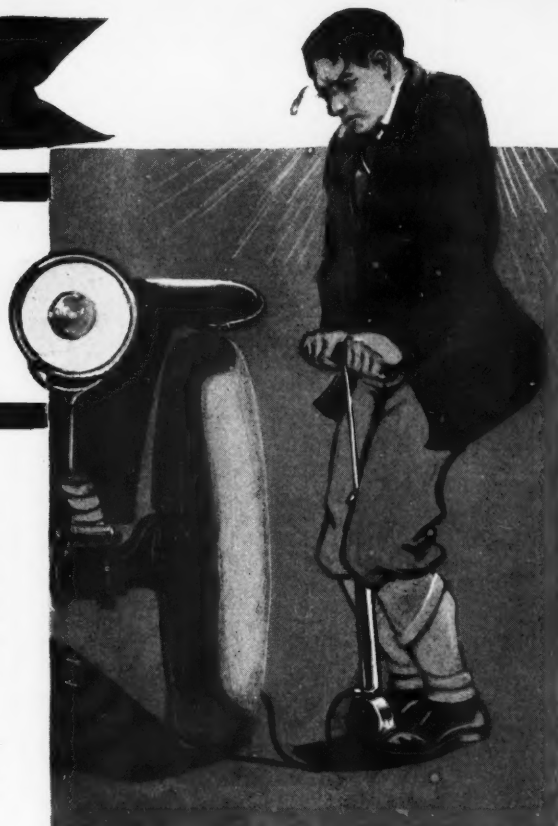
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Physical torture because a hand pump **makes YOU work with it.** A hand pump without 2 strong arms and a strong back **behind** it is nothing but a useless piece of tubing with a piston in it.

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MAYO *SPARK* PUMP

THE MAYO PUMP lets YOU out. It pumps tires **for** you, not **with** you. It uses the motor's muscles—permits you to **save** yours. You sit on the running-board and **watch** the motor do the work 5 times faster than you could with a back-racking hand pump. And your wife can pump tires as well as you.

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The MAYO is instantly attached by substituting for any spark plug. Pumps nothing but pure, fresh air. Inflates the largest tire in 2 to 4 minutes. Built with metal rings like your motor and will last as long. No extras or special fixtures required to install. No costly work of installation as with other pumps. Adaptable to all cars. Weight 2½ pounds. Fits nicely into the tool box. Complete with 12 feet of hose, gauge and all connections. MAYO Q. D. Spark Plug, \$1.50 extra.

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